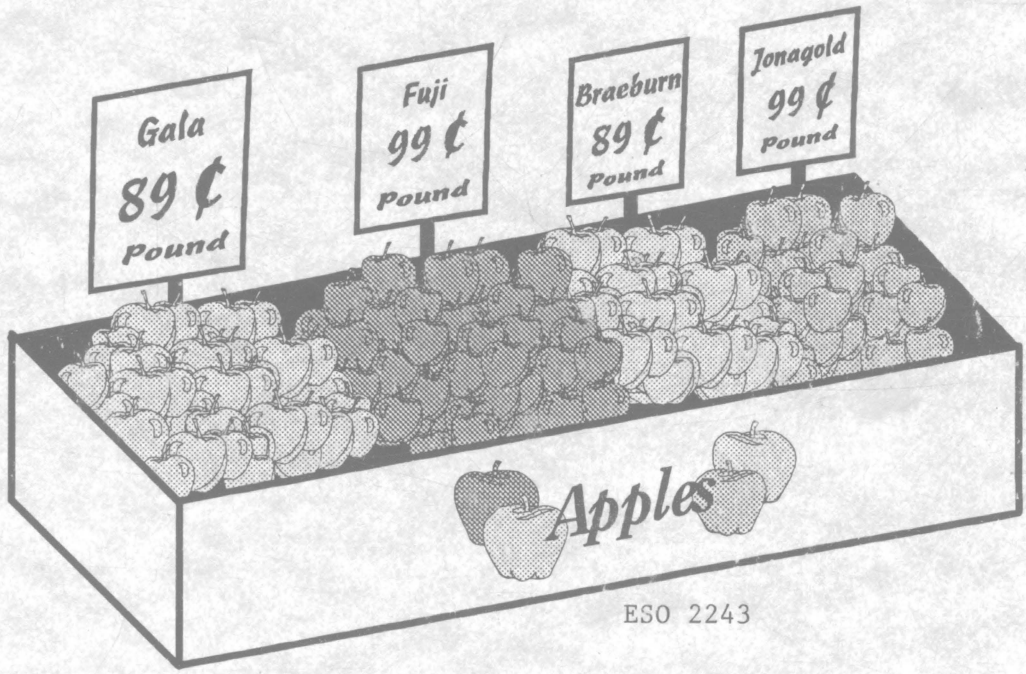
APPLES: A Survey of Consumer Buying and Consumption Habits

SUMMARY OF RESULTS



ESO 2243

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FOREWORD

This document provides a summary of the findings from a mail survey of 500 households (apple consumers) in Franklin county. The survey instrument was developed through close collaborations with an apple producer, Mrs. Nancy Patterson. She provided a thorough and valuable critique of my proposed instrument. Most importantly, she helped me to focus on issues of primary concern to apple growers and marketers.

Admittedly, completion of this document has gone far beyond my original time schedule. Three important factors account for much of this delay. First, the budget for this project was not sufficient to hire specialized data entry personnel. Second, it was difficult to utilize support staff in my department because we have been short of support staff for much of the past two years. Finally, extra research and teaching responsibilities simply tied up much of my time. Nevertheless, working on this project has been rewarding, and I hope the results are valuable to the Ohio Apple Marketing Program committee.

This report consists of three major sections: Introduction and Analysis; Appendix I; and Appendix II. A fourth and minor section is provided as Appendix III. The first major section provides a written summary of the results and some analysis and interpretation of these results. Appendix I provides Tables for the responses to each question on the survey instrument. These Tables give the frequency counts for all responses to each question. Appendix II provides a graph or picture for most of the responses shown in the Tables in Appendix I. A few of the responses do not have graphs because no meaningful interpretation

could be given to such graphs. Finally, a fourth section, Appendix III, provides all the comments expressed by the respondents at the end of the survey instrument.

This report is written in non-technical language and I hope it can be easily understood. As the author of this report, I am quite willing to answer any further questions you may have, and I am also willing to make any necessary changes and additions to this report. Again, it has been a pleasure working on this report and I hope you find it to be fun and rewarding reading.

Eugene Jones
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INTRODUCTION

An issue of concern in any marketing survey is the extent to which the survey results are truly representative of the larger population of interest. Also, with this sample being limited to Franklin County, an additional issue emerges here as to whether Franklin county is representative of the state of Ohio. An examination of several demographic factors shows that Franklin county mirrors the state in many ways, but there are also some important exceptions.

Residents of Franklin county, on average, have obtained more years of schooling, have slightly higher incomes, and have a younger age distribution than residents in other parts of the state. Whereas the average 1990 household income in the state was $35,333, it was $37,378 in Franklin county. Additionally, 8.4 percent of the households in Franklin county had incomes above $75,000, but just 6.9 percent of households in the state had incomes above $75,000. Also, 27.5 percent of the persons in the county over 25 earned at least a Bachelor's degree, as compared to 17 percent for the state. With respect to age, 24.6 percent of the state residents in 1990 were over the age of 60, as compared to 18.7 percent in Franklin county[a]. Undoubtedly, most of these differences are due to the location of state government and a large concentration of universities in Franklin county. With the exception of age distribution, these same demographic factors are characteristic of differences between the respondents to this

[a] Note that these percentages are obtained by limiting the population to 20 years and over. Comparable percentages for the entire population are 17.5 and 13.5 respectively.

survey and the larger population of the state.

Respondents to this survey have received considerably more years of education, and have much higher incomes than most state residents. Whereas just 21.7 percent of the respondents to this survey had not received at least some college education, 47.3 percent of the residents in the county and 60.6 percent of the residents in the state 25 years and over have received no college education. Further, 11.8 percent of the respondents to this survey obtained graduate or professional degrees, as compared to 5.9 percent for the state and 9.3 percent for the county (see Figure C-3). Similar differences are shown for income. Whereas 12.3 percent of the respondents to this survey had household incomes above $90,000, just 5 percent of the households in the state and 6 percent of those in the county had incomes above $90,000 (see Figure C-7). Despite these demographic differences between respondents and the larger state population, it is possible to extrapolate from this sample to the larger population. That is, there is little evidence in the results analyzed from this survey to suggest that apple purchases or consumption is highly correlated with high incomes or high levels of education. Indeed, a factor with which apple consumption is most highly correlated, age, has a distribution in the sample which more closely approximate that of the state.

Other demographic information collected in the survey is more difficult to evaluate relative to state averages, but this information can be compared to that for other surveys, such as the 1995 Fresh Trends survey. Eighty five (85) percent of the respondents in the Fresh Trends survey were women, as compared to 73 percent for this survey (see Figure C-2).

Forty four (44) percent of the respondents to this survey had children in their household, as compared to 37 percent in the Fresh Trends survey (see Figure C-4). Overall, it seems reasonable to conclude that the results obtained in this survey can be extrapolated to the larger population of Ohio. Specific household characteristics such as gender and the presence of children are comparable to those for other national surveys and factors such as education and income which are biased upward in this survey have no strong correlation with apple consumption.

ANALYSIS OF RESULTS

In March, 1994, a random sample of 500 registered voters in Franklin county were sent mail surveys inquiring about their buying and consumption of apples. One hundred ninety-one (191) surveys were returned and one hundred sixty-one of these were complete and usable. Consistent and thorough responses were provided by practically all one hundred sixty-one respondents, indicating a willing and serious commitment of their time and effort.

Many observations on consumer buying and consumption habits of apples can be gleaned from these survey responses and most of these are highlighted in this report. Ohio apple consumers express a strong preference for Red and Golden Delicious apples (see Figures B-5 and B-6). These varieties are number one and two in terms of consumers' familiarity, their purchases, and their expressed preferences for varieties of specialization for the state of Ohio. With respect to these same factors, these varieties are generally followed

by Granny Smith, Jonathan, McIntosh, Rome Beauty, Gala and Fuji. For 1993, one hundred twenty one (121) of 161 respondents purchased Red Delicious apples and one hundred nine (109) purchased Golden Delicious apples (see Figure B-9). By contrast, 34 respondents purchased Gala apples and 24 purchased Fuji (see Table B-9). Thus, one may conclude that Ohio consumers purchase Red and Golden Delicious apples with three to five times the frequency with which they purchase Fuji and Gala apples.

With respect to place of purchase, 89 percent of the respondents purchased a majority of their apples from supermarkets (see Figure A-1). Approximately 6 percent of the respondents purchased most of their apples from apple orchards during the harvesting season. Of course, most respondents indicated a use of different market outlets at different times of the year. Respondents who use more than one outlet have observed a superior quality of apples at farm markets (see Figure A-7). These farm markets are utilized by more than one-half of the respondents and they account for nearly one-fifth of the apple purchases of these consumers. The most frequent response given for this small share of apple purchases at farm markets is their seasonal operation.

In ranking factors which determine their place of shopping for apples, respondents identified the quality of apples offered for sale as being the number one determinant (see Figure A-8). This is followed by convenience of the shopping facility and the consumer's own shopping habits. Other factors of considerable importance include friendly and courteous service, integrity of business personnel, and reputation of business owners. Advertising and

family traditions have limited influence on one's choice of a shopping facility for apples. For those apple buyers who are influenced by advertising, newspaper and special store displays are viewed as the most effective type of advertising.

Even though respondents expressed the highest preference for Red Delicious apples, they prefer it in its natural as opposed to its waxed form. More than half of all respondents stated that their purchase of apples is not influenced by the shine or waxed condition of apples (see Figure A-11). Indeed just slightly more than a third of all respondents found a waxed apple to be more appealing than a non-waxed apple. Apple purchases, however, are significantly influenced by soft spots and bruising. Ninety-five percent of all respondents indicated that they have reduced their intended purchases of apples because of observed defects, the most common ones being soft spots and bruising (see Figure A-13).

With respect to apple quality by area of production, more than 62 percent of all respondents identified Ohio-grown apples as being as good as or better than apples from other production areas (see Figure A-23). Only 5 percent of the respondents thought Ohio-grown apples were not as good as apples from other production areas and 32 percent of respondents felt they could not compare apple quality by production areas. Approximately 39 percent of the respondents actually look for Ohio-grown apples when making purchases and this is roughly the same percentage of the respondents who indicated a preference for apples by production areas (see Figure A-22).

Even though soft spots and bruises serve to diminish apple purchases, it should be noted that 78 percent of all respondents give an extremely high ranking to the overall quality of the apples they purchase (see Table A-19). Relative to other fruit, apples are ranked as good as or better than other fruit by 87 percent of the respondents (see Figure A-20). Just 8 respondents, or 5 percent of all respondents, felt apples were of lower quality than other fruits. A factor which many contribute to the high level of consumer satisfaction with apples is the fact that approximately 70 percent of consumer purchases are from bulk displays (see Figure A-17). Such displays are quite pleasing to consumers as 80 percent of them indicate complete satisfaction with the purchasing options available for apples (tray packs, bags, bulk displays, etc.).

A most revealing observation from these survey results is the fact that a full 85 percent of the respondents are aware of the 5-A-Day program for fruits and vegetables (see Figure A-25). This high level of awareness is revealing because it greatly exceeds that shown for all other surveys. For example, Fresh Trends, 1995 revealed an awareness level among Americans of just 19 percent. Interestingly, even though the level of educational attainment for the participants in this survey greatly exceeds that of the participants in the Fresh Trends survey, awareness of the 5-A-Day program is not positively correlated with education. Either Ohio apple consumers are just naturally well informed, or Ohio apple marketers should take credit for doing an excellent job of informing consumers of the healthful benefits of apples.

While Ohio apple consumers express a high level of awareness of the 5-A-Day

program, their responsiveness to the 5-A-Day message closely mirrors that shown for consumers in other surveys. Whereas 29 percent of the respondents in the Fresh Trends, 1995 survey stated that they are eating more produce as a result of the 5-A-Day recommendations, 26 percent of the respondents in this survey indicated that they have increased their consumption of apples in response to the 5-A-Day messages. Additionally, 72 percent of the respondents to this survey stated that their future consumption of apples and apple products is unlikely to change in response to the 5-A-Day messages (see Figure A-26). Such statements suggest that even though Ohio apple marketers may have exceeded other areas in making consumers aware of the healthful benefits of apples, there is still much work to be done in terms of moving consumers from a mere awareness stage to a responsiveness stage of actually consuming more apples.

Even though consumers express a reluctance to increase their consumption of apples, this reluctance is not due to a misperception of the fat content of apples. A full 82 percent of the respondents to this survey recognize that apples contribute less than 1 percent of the fat in their diets (see Figure A-29). Just as consumers appear well informed about the fat content of apples, they seem equally as well informed about farmers' purpose for using pesticides and the ultimate effect of these pesticides on apples. Seventy three (73) percent of the respondents stated that their consumption of apples has not been influenced by media stories on farmers use of pesticides on apples (see Figure A-31).

Respondents' answers to several questions regarding negative media stories about

pesticides show that consumers have considerable confidence in apple growers, handlers, and government regulatory agencies. Approximately 46 percent of all respondents indicated that they believe the amount of pesticide used by apple growers is much too limited to harm humans. Additionally, 59 percent of all respondents stated that they believe most pesticide residuals are removed by simply washing apples. Similarly, 57 percent of all respondents stated a willingness to purchase apples treated with pesticides because they believe pesticides serve to control diseases and improve the appearance of apples (see Table A-32).

Approximately 86 percent of the respondents stated that they have not reduced their consumption of apples because of concerns about pesticide use (see Table A-32). Additionally, only 7 percent of the respondents have switched to organic apples because of their concerns about pesticide use. These responses help explain why a large number of respondents (45 percent) agree with the statement that farmers would not "use pesticides at levels which are harmful to human health." Finally, with respect to questions on pesticide use, respondents showed the least agreement with a statement pertaining to the overall safety of the food supply. Just 40 percent of the respondents agreed with the statement that U.S. regulatory agencies can be relied on to provide a safe food supply. This suggests that consumers do have concerns about the safety of the food supply, even though they are not overly concerned about pesticide use on apples.

With respect to apple quality, most respondents (65 percent) indicated that they are aware of the fact that apples can be kept in good eating quality year-round with controlled

atmosphere storage (see Figure B-1). Moreover, most of these same respondents (59 percent) are aware of the fact that this technology is currently used by apple growers (see Figure B-2). Because a majority of respondents were aware of growers' use of controlled atmosphere storage, just 40 percent of the respondents stated that improved knowledge of controlled atmosphere storage would cause them to extend their consumption of apples to a longer time period. However, apple growers should take note of the fact that 67 percent of the respondents expressed a willingness to pay slightly higher prices for apples if such prices resulted from the use of controlled atmosphere storage to extend the availability and eating quality of apples (see Table B-4).

APPLE VARIETIES -- CONSUMER FAMILIARITY AND PURCHASE

As might be expected, consumers are most familiar with the traditional apple varieties of Golden and Red Delicious, Granny Smith, Jonathan, McIntosh and Rome Beauty. New varieties such as Braeburn, Criterion, Fuji, Gala and Jonagold are unfamiliar to a majority of consumers. This lack of consumer familiarity with these newer varieties has important implications for Ohio apple marketers because these newer varieties generally command higher prices. For example during the week of January 22-28, 1995 the average shipping-point prices of Fuji and Gala from the State of Washington were respectively $25 and $27.50, whereas the comparable prices of Red Delicious and Golden Delicious were respectively $13 and $12.50. Assuming comparable production costs for newer and traditional varieties, these price differentials suggest that Ohio apple producers have much to gain from promoting

increased consumer exposure to the newer varieties. Such exposure is imperative because the results of this survey show that consumer purchases of apples tend to be determined by their level of familiarity. For example, Red Delicious, Golden Delicious, Granny Smith and Jonathan are the top four varieties with which consumers are familiar and these are also the top four varieties which consumers purchase.

Although consumers were asked to recommend a specific apple variety for the state of Ohio to specialize in producing, their responses and lack of responses suggest that they do not feel comfortable with such recommendations. Only 117 respondents answered this question (B-7) and the top three recommended apple varieties are Red Delicious, Golden Delicious and Gala (see Figure B-7). It is of interest to note that Red Delicious received twice as many votes as Golden Delicious, and Gala received more votes than Granny Smith or Jonathan. These observations are of interest because these varieties are not identified in this order as the best tasting Ohio-grown apples. Again, the number of responses (94) to the question about the best tasting apple varieties suggests that consumers feel their knowledge base about apples is insufficient to make an evaluation. Nevertheless, for those 94 who answered the questions, Golden Delicious apples are rated ahead of Red Delicious ones, and both Jonathan and Granny Smith are rated ahead of Gala. Additionally, it should be noted that the third-largest number of votes cast were by respondents who said they could not identify the best-tasting apple variety (see Figure B-8).

What is clear from the two preceding questions (B-7 and B-8) is that Ohio apple

producers cannot rely upon consumers for a useful set of guidelines as to an apple variety to select for production specialization. Consumers are most familiar with Golden and Red Delicious apples and, regardless of the question asked, these two varieties tend to surface to the top in consumer responses. As with the 5-A-Day program in which consumers are showing great reluctance to elevate their consumption of fruits and vegetables, consumers are showing similar reluctance to move away from the traditional Red and Golden Delicious apple varieties. Yet, as apple growers think of planning their future production, it seems unwise to plan their future based on what the consumer wants today. Producers undoubtedly will need to be ahead of the consumer and plan production around what the consumer will want "tomorrow". Of course, as apple growers plan the production of newer apple varieties, it is quite likely that they will also need to plan considerable marketing and promotional efforts to move these newer varieties through the marketing channels. In other words, it is not likely that "supply will create its own demand."

Even though the responses show that most consumers purchase Red and Golden Delicious apples and these varieties represent a large share of their total apple purchases, it also should be noted that the newer varieties of apples represent a large share of total apple purchases for several consumers (see Figure B-9). For example, for the 34 respondents who purchased Gala apples in 1993, these apples represented 23 percent of their total apple purchases (see Table B-9). Similarly, Fuji apples represented 23 percent of total apple purchases for the 24 respondents purchasing them in 1993. Additionally, Braeburn apples represented 24 percent of apple purchases for 9 of the respondents to this survey. These large

percentages suggest that these newer apple varieties are not a small part of total apple consumption for those consumers who have tried the newer varieties. However, the large number of respondents who did not purchase these newer varieties during 1993 suggests that apple marketers have not yet moved a large segment of the population beyond their traditional shopping habits for apples. This is clearly seen by the fact that Red Delicious apples represented 43 percent of apple purchases for more than 75 percent of all the survey respondents (see Figure B-9). When this is coupled with the fact that most of these same respondents purchased Golden Delicious apples and these represented 30 percent of apple purchases, it becomes quite apparent that these traditional varieties dominate consumer purchases.

Survey results show quite clearly that Ohio does not produce an apple variety that consumers clearly identify as having an Ohio origin. When consumers were asked to identify an apple variety best associated with the state of Ohio, more than 45 percent of the respondents left the question blank, suggesting that they really do not know of a variety having a clear Ohio identity. Moreover, 42 percent of the 88 respondents who did answer this question (B-10) indicated that they do not know of a variety having a well-known Ohio identity (see Figure B-10). Red Delicious and Jonathan were the top two varieties picked by the 88 respondents, but it should be recalled that these are also the varieties with which consumers are most familiar. These responses show that Ohio apple producers have a lot of flexibility in selecting an apple variety to promote as the state apple. That is, current consumer perceptions do not back producers into any particular apple variety. A promotional

program for any selected apple variety should have a good chance of succeeding because there are few perceptions to change about any current variety.

Consumers ranked a number of factors which influenced their apple purchasing decisions. Interestingly, the shine or waxed condition of an apple ranked among the lowest of ten factors in influencing one's purchase decisions (see Figure B-11). Ranked highest among the ten factors is taste, followed by firmness and overall quality. These rankings are interesting because they suggest tremendous sales potential for the newer varieties if, indeed, these newer varieties are better tasting. And indeed research by Stebbins and others at Oregon State shows that Braeburn, Fuji, Melrose and Gala are consistently rated above Red and Golden Delicious apples in terms of taste. Moreover, in many instances, Jonagold and Mutsu are rated above Golden Delicious apples in terms of taste. Current sales of these newer varieties may be limited by the fact that many consumers have not yet tasted them. If so, apple growers and marketers must develop innovative methods of moving consumers beyond their comfort zone of purchasing traditional varieties.

Additional results from the survey suggest that consumers are receptive to purchasing non-traditional varieties. For example, 72 percent of all the respondents to this survey indicated that the flavor of an apple is not directly related to its color (see Figure B-12). This means that consumers will not evaluate the newer varieties negatively simply because they may not color as well as some of the traditional varieties. Further, consumers' evaluation of apple color suggests that some of the traditional varieties which are marketed at

discounts may indeed be ranked quite highly by consumers. That is, responses reported in this survey do not support the premise that consumers automatically rank "off-color" apples below those at the high end of the color spectrum. Regardless of the variety or color level of apples consumers purchase, most of them (79 percent) express a high level of satisfaction with them (see Figure B-13). Simply put, this means that apples do not have a quality perception problem.

Even though consumers are quite satisfied with their apple purchases, it is of interest to note that few of them consume more than two apples per day and most consume just one. About 5 percent of the consumers who responded to questions B-14 and B-15 indicated that their apple consumption is best characterized on a weekly basis as opposed to a daily basis. That is, they suggested that this question would have been easier to answer if expressed on a weekly basis. Nevertheless, all but 7 percent of the respondents consume at least one apple per day during the Fall, and the percentage of consumers who do not eat at least one apple per day increase progressively through Winter, Spring and Summer (see Tables B-14 and B-15). In general, about 22 percent of the respondents do not consume apples during Winter through Summer. However, it should be noted that family members within a household do not necessarily follow the same pattern of consumption as that of adults. In other words, a larger percentage of families have year-round consumption than that shown for adult respondents. Of course, this is to be expected as individuals have different tastes and preferences.

Even though controlled atmosphere storage may have the ability to keep apples in good eating quality year-round, consumers clearly recognize a quality difference from season to season. Fall apples are perceived to be of highest quality, and then quality perceptions decline through Winter and Spring (see Figure B-17). Undoubtedly, because of Summer harvest for a few apple varieties, consumers' quality perceptions of apples start to improve during Summer. These lower quality perceptions of non-Fall apples, however, do not limit consumers' consumption to just the Fall season. Sixty percent of the respondents eat apples year-round, and just 2 percent of consumers limit their apple consumption to the Fall season (see Figure B-18). For those consumers who do not eat apples year-round, it is of interest to note that it is the availability of other soft fruits and not poor apple quality that causes them to confine their apple consumption to selected seasons.

Consumers generally rank apples quite high among the many fruits they eat. Apples are either the most preferred or the second most preferred fruit for 50 percent of the respondents (see Figure B-20). Moreover, a full 89 percent of the respondents feel that apples are as good of a buy for the price as any other fruit. Only 5 percent of the respondents feel some others fruit may be a better buy than apples -- a small percentage, and perhaps even smaller when evaluated from the perspective that all 161 respondents answered this question. Perhaps consumers' awareness of the competitive prices for apples help explain why they are willing to pay for any price effects controlled atmosphere storage may have on apples in assuring their year-round availability.

CONCLUSIONS

The results of this survey provide convincing evidence that consumers value many attributes of apples, among the least of which is color. From some of the general comments and especially the evaluations illustrated in Figure B-11, it is clear that taste, firmness, skin condition, vitamins and overall apple quality are quite important to consumers. Given the importance of these attributes, a clear signal is sent to apple marketers to begin to emphasize these factors in their promotions. That is, while the results of this survey show the importance of many attributes of apples, they further show a reluctance on the part of many consumers to go beyond their traditional purchases of Red and Golden Delicious apples. New marketing methods must be implemented to move consumers away from these traditional varieties.

Results of this survey also shows that Ohio consumers have a very positive perception of the quality of all apples, regardless of where grown. Despite much promotion by Washington apple producers, just 8 percent of the respondents to this survey view Washington apples as being superior to Ohio-grown apples. Clearly this suggests that low quality perceptions are not a major impediment to marketing Ohio apples. Further, given the fact that consumers are willing to pull Ohio-grown apples through the marketing channels, this suggests that wholesale marketing channels can be an important source of market expansion for Ohio apple producers. Indeed, existing wholesale price differentials for traditional and non-traditional apple varieties suggest that many producers may find the non-traditional

varieties to be quite profitable in wholesale channels.

Observations on what consumers say and what they do present somewhat of a dilemma for apple growers and other fruit producers. While consumers express great awareness of the 5-A-Day for Better Health program, and agree in principle with its goals, they express great reluctance in changing their personal consumption habits. Similarly, while apple growers, marketers, researchers, and some consumers have emphasized the great taste of many of the newer apple varieties, there are still many consumers who have not moved beyond their traditional purchasing behavior. These observations suggest that there is a time lag between consumers' awareness of important information and their willingness to act upon that information. Yet, because of the considerable time lag between planning new apple production and actually reaping its harvest, apple producers cannot wait until consumers start to act upon important information. Ohio apple producers and marketers must develop innovative marketing methods to try and push consumers away from a mere awareness to an actual purchase decision. For apples, a very important method in accomplishing this objective is likely to be promotion coupled with more taste opportunities.

APPENDIX I

Section A: Apple Purchases

A-1. From which of the following outlets do you purchase most of your apples?

	N	%
1. Supermarket	142	89.87
2. Farm Market	4	2.53
3. Wholesaler	1	0.63
4. Apple Orchard (e.g., pick-your-own)	10	6.33
5. Other (Please specify)	1	0.63
Total	158	100.0

A-2. During the course of a year, do you sometimes purchase apples from more than one outlet (e.g., supermarkets and farm markets)?

	N	%
1. No	44	27.30
2. Yes	117	72.70
Total	161	100.0

A-3. Do you purchase your apples from different markets at different times of the year (e.g., Farm markets in Fall and Supermarkets in Winter)?

	N	%
1. No	47	29.38
2. Yes	113	70.63
Total	160	100.00

A-4. If you change market outlets during the year, which of the factors identified below are relevant to your decision to change markets, say from Market A to Market B? (Circle all that apply).

	N	%
1. Preferred varieties become less available in Market A	28	15.56
2. Quality of preferred varieties decline in Market A	38	21.11
3. Varieties of apples offered for sale decline in Market A	37	20.56
4. Market A operates seasonally	53	29.44
5. Apple prices in Market A change relative to other markets	12	6.67
6. Other (Please specify)	12	6.67
Total		

COMMENTS:
The "other" factors include growing own, accessibility to farm markets, and the unavailability of some varieties in all stores.

A-5. If you use more than one market throughout the year, or throughout the time period for which you purchase apples, what percent of your total purchases are from the markets identified below? (Total should sum to 100).

	N	%
Market Outlet		
1. Supermarket	143	77.84
2. Farm Market	89	19.04
3. Wholesaler	4	26.25
4. Apple Orchard	49	26.08
5. Other	9	14.67

A-6. If you sometimes purchase apples from more than one outlet (e.g., supermarkets and farm markets), do you find a difference in quality? (Skip this question if you always buy from the same source).

	N	%
1. No	25	20.5
2. Yes	87	71.3
3. Don't know	10	8.2
Total	122	100.0

A-7. If you find apple quality to vary by market outlet, which of the following markets seem to have the highest quality of apples? (Skip this question if you always buy from the same source).

	N	%
1. Supermarket	25	21.19
2. Farm Market	52	44.07
3. Wholesaler	2	1.69
4. Apple Orchard (e.g., pick-your-own)	35	29.66
5. Other (Please specify)	4	3.39
Total	118	100.0

COMMENTS:
The "other" factors for this question are growing own, and finding no difference in apple quality by market outlet.

A-8. Because there are many factors which impact one's decision to use a particular market, can you rank the importance of the factors below in influencing your market selection? (1 indicates least important, 5 indicates most important).

	1		2		3		4		5		To
	N	%	N	%	N	%	N	%	N	%	
1. Convenience of location	6	4.11	9	6.16	21	14.38	29	19.86	81	55.48	146
2. Quality of apples	3	2.08	2	1.39	10	6.94	25	17.36	104	72.22	144
3. Friendly and courteous service	1	0.76	15	11.36	36	27.27	47	35.61	33	25.00	132
4. Integrity of business personnel	4	3.03	10	7.58	38	28.79	49	37.12	31	23.48	132
5. Reputation of business owners	4	3.05	7	5.34	41	31.30	44	33.59	35	26.72	131
6. Word of mouth advertising	17	13.18	24	18.60	43	33.33	29	22.48	16	12.40	129
7. Media advertising	35	27.13	37	28.68	35	27.13	15	11.63	7	5.43	129
8. Shopping habits	11	8.21	14	10.45	24	17.91	44	32.84	41	30.60	134
9. Family tradition	45	35.16	18	14.06	29	22.66	20	15.63	16	12.50	128

A-9. Are your purchases of apples sometimes influenced by advertisements?

	N	%
1. No	99	62.3
2. Yes	55	34.6
3. Don't know	5	3.1
Total	159	100.0

A-10. If you are influenced by advertisements, what type of advertising has been most effective in influencing your purchases? (Circle all that apply).

	N	%
1. Radio	1	0.72
2. Television	14	10.07
3. Newspapers	48	34.53
4. Road signs	21	15.11
5. Point of purchase materials	18	12.95
6. Special store displays	37	26.62

A-11. Are your purchases of apples influenced by the **shine** of an apple?

	N	%
1. No	88	55.7
2. Yes	55	34.8
3. Don't know	15	9.5
Total	158	100.0

A-12. If the shine of an apple is a concern to you, would you say that the shine of a **waxed** apple makes it:

	N	%
1. More appealing to you	49	36.30
2. Less appealing to you	31	22.96
3. Neither more nor less appealing to you	55	40.74
Total	135	100.0

A-13. When you go to the store to purchase apples, do you sometimes change your purchase plans because of poor apple color, bruising, stem punctures, soft spots, or blemishes? (Circle one).

	N	%
1. No	7	4.4
2. Yes	151	95
3. Don't know	1	0.6
Total	159	100.0

A-14. If you answered "Yes" to the preceding question, how would you rank the five factors in terms of their influence on your purchase decision? Please rank them from least bothersome to most bothersome. (1 indicates most bothersome; 5 indicates least bothersome).

	1		2		3		4		5		Total
	N	%	N	%	N	%	N	%	N	%	
1. Poor color	23	15.86	12	8.28	29	20.00	26	17.93	55	37.93	145
2. Bruising	74	50.00	49	33.11	18	12.16	4	2.70	3	2.03	148
3. Stem punctures	17	11.97	18	12.68	26	18.31	48	33.80	33	23.24	142
4. Blemishes	21	14.29	30	20.41	42	28.57	32	21.77	22	14.97	147
5. Soft spots	83	56.08	31	20.95	22	14.86	5	3.38	7	4.73	148

A-15. What is the most common quality problem you find with apples? (Please list below. It does not have to come from the preceding list).

	N	%
Bruising	53	39.55
Poor Flavor	22	16.42
Soft Spots	19	14.18
Mushy, Dry, Stored	18	13.43
Hard - not Ripe	7	5.22
Small Size	3	2.24
General Condition/Age	3	2.24
Freshness-Hardness-No Wax	3	2.24
Low Quality	2	1.49
No Cooking suggestions	2	1.49
Poor condition	1	0.75
Expensive	1	0.75
Total	134	100.0

A-16. Does it matter to you where an apple is grown? Or, is an "apple" just an "apple"?

	N	%
1. Yes, it matters to me where an apple is grown	59	37.6
2. No, an "apple" is just an "apple"	75	47.8
3. Don't know	23	14.6
Total	157	100.0

A-17. What is your most common way of purchasing apples?

	N	%
1. In prepacked bags (1 lb., 2 lbs., etc.)	38	24.20
2. From bulk displays (select your own apples)	108	68.79
3. In prepacked traypacks	3	1.91
4. In prepacked containers (pecks, bushels, etc.)	3	1.91
5. Other (Please specify)	5	3.18
Total	157	100.0

COMMENTS:
The "other" method of purchasing apples is directly from the orchards.

A-18. Are you satisfied with the packaging used by the outlets from which you purchase your apples?

	N	%
1. No	28	19.05
2. Yes	119	80.95
Total	147	100.0

A-19. On a scale of 1 to 5 (with 1 indicating the lowest and 5 indicating the highest), how would you rank the overall quality of the apples you purchase?

1		2		3		4		5		Total
N	%	N	%	N	%	N	%	N	%	
3	1.91	3	1.91	29	18.47	94	59.87	28	17.83	157

A-20. As compared to other fruits you purchase, how would you rank the overall quality of apples?

	N	%
1. Better than other fruit	45	28.48
2. About the same as other fruit	93	58.86
3. Not as good as other fruit	8	5.06
4. Cannot compare	12	7.59
Total	158	100.0

A-21. When you purchase apples, are you aware that you are sometimes purchasing Ohio-grown apples?

	N	%
1. No	47	29.9
2. Yes	110	70.1
Total	157	100.0

A-22. When you purchase apples, do you sometimes look for Ohio-grown apples?

	N	%
1. No	94	61.0
2. Yes	60	39.0
Total	154	100.0

A-23. If you are aware of the fact that you sometimes eat Ohio-grown apples, how would you rank their overall quality with that of other apples?

	N	%
1. Better than other apples	30	21.0
2. About the same as other apples	56	40.9
3. Not as good as other apples	7	5.1
4. Cannot compare	44	32.1
Total	137	100.0

A-24. When Ohio-grown apples are displayed side-by-side with Washington State apples, how do you rank the two?

	N	%
1. Washington apples are of higher quality	12	8.4
2. Ohio-grown apples are of higher quality	16	11.2
3. Washington and Ohio apples are of equal quality	23	16.1
4. Apple quality cannot be determined from looking at state labels	92	64.3
Total	143	100.0

A-25 . The National Cancer Institute and the Produce for Better Health Foundation initiated a program two years ago to encourage all Americans to eat 5 servings of fruits and vegetables per day. Are you aware of this program?

	N	%
1. No ... If no, skip to question A-29	23	14.6
2. Yes ... If yes, answer the following questions	134	85.4
Total	157	100.0

A-26. As a result of the 5-A-Day recommendations, how would you describe their impact on your consumption of apples? My consumption of apples has:

	N	%
1. Increased	35	25.5
2. Stayed the same	99	72.3
3. Decreased	1	0.7
4. Don't know	2	1.5
Total	137	100.0

A-27. As a result of the 5-A-Day recommendations, my consumption of apple products (juice, cider, etc.) has:

	N	%
1. Increased	21	15.0
2. Stayed the same	102	72.9
3. Decreased	12	8.6
4. Don't know	5	3.6
Total	140	100.0

A-28. Because of the 5-A-Day recommendations, my future consumption of apples and/or apple products is:

	N	%
1. Likely to increase	29	20.6
2. Likely to decrease	2	1.4
3. Likely to show no change	101	71.6
4. Uncertain	9	6.4
Total	141	100.0

A-29. In your opinion, what percent of the total fat in the average American diet comes from apples? (Please note that the average American eats 39 pounds of apples per year).

	N	%
1. Less than 1 percent	126	81.8
2. From 2 to 4 percent	22	14.3
3. From 5 to 7 percent	4	2.6
4. More than 7 percent	2	1.3
Total	154	100.0

A-30. In your opinion, what percent of the total fat in your family diet comes from apples?

	N	%
1. Less than 1 percent	132	85.7
2. From 2 to 4 percent	15	9.7
3. From 5 to 7 percent	5	3.2
4. More than 7 percent	2	1.3
Total	154	100.0

A-31. Several news media stories have reported on farmers' use of pesticides on apples. Assuming you have heard some of these reports, would you say your consumption of apples has been influenced by these reports?

	N	%
1. No	115	73.2
2. Yes	37	23.6
3. Don't know	5	3.2
Total	157	100.0

A-32. If you have heard the media reports about farmers' use of pesticides, but yet still consume apples, how would you evaluate the factors below in helping you to compensate for these negative reports? (Please circle the correct number: 1 = **True**; 2 = **False**; 3 = **Don't know**).

	1		2		3		Total
	N	%	N	%	N	%	
1. I buy apples which have been cared for with pesticides because I trust the growers to be trained, to use as little pesticides as possible, and to be truthful when they say the amount used is too infinitesimal to harm humans.	71	46.41	42	27.45	40	26.14	153
2. I believe the National Cancer Institute, apple growers, and produce managers when they report that washing apples will remove the pesticide residuals.	91	58.71	33	21.29	31	20.00	155
3. I buy apples treated with pesticides because I trust the regulatory agencies of the U.S. government to provide a safe food supply.	62	40.26	59	38.31	33	21.43	154
4. Because farmers are humans and also consumers of apples, I do not feel they would use pesticides at levels which are harmful to human health.	69	44.81	48	31.17	37	24.03	154
5. Because of my concern about pesticides, I buy mostly organic apples (apples grown without pesticides).	11	7.14	112	72.73	31	20.13	154
6. Because of my concern about pesticides, I have reduced my consumption of apples and/or apples products.	14	9.15	131	85.62	8	5.23	153
7. Because I prefer apples which look nice and are disease free, I am willing to purchase apples treated with pesticides.	86	56.95	41	27.15	24	15.89	151

SECTION B: Apple Quality and Varieties

B-1. Are you aware of the fact that apple producers can maintain apples in good eating quality year-round by placing them in controlled atmosphere storage? (Controlled atmosphere storage is a method for storing commodities under ideal conditions and temperatures to preserve their quality).

	N	%
1. No	54	34.8
2. Yes	101	65.2
Total	155	100.0

B-2. Are you aware of the fact that apple producers do place apples in controlled atmosphere storage and then remove them from storage for sale during the Winter, Spring, and Summer months?

	N	%
1. No	65	40.6
2. Yes	95	59.4
Total	160	100.0

B-3. If you knew controlled atmosphere storage could keep apples at excellent quality throughout the year, would you be more likely to eat apples year-round, or for a longer time period than you currently eat apples?

	N	%
1. No	56	36.8
2. Yes	61	40.1
3. Don't know	35	23.0
Total	152	100.0

B-4. If controlled atmosphere storage resulted in a slightly higher price for Winter, Spring and Summer apples, would you be willing to pay a slightly higher price for the availability of apples during these seasons?

	N	%
1. No	22	14.4
2. Yes	104	68.0
3. Don't know	27	17.6
Total	153	100.0

B-5. Which of the following varieties are familiar to you? (Circle all that apply).

	Number		Percent	
	Familiar	Not Familiar	Familiar	Not Familiar
1. Braeburn	17	144	10.6	89.4
2. Cortland	64	97	39.8	60.2
3. Criterion	5	156	3.1	96.9
4. Empire	28	133	17.4	82.6
5. Fuji	57	104	35.4	64.6
6. Gala	66	95	41.0	59.0
7. Golden Delicious	155	6	96.3	3.7
8. Granny Smith	146	15	90.7	9.3
9. Ida Red	41	120	25.5	74.5
10. Jonagold	23	138	14.3	85.7
11. Jonathan	142	19	88.2	11.8
12. McIntosh	139	22	86.3	13.7
13. Melrose	28	133	17.4	82.6
14. Mutsu	5	156	3.1	96.9
15. Paula Red	17	144	10.6	89.4
16. Red Delicious	154	7	95.7	4.3
17. Rome Beauty	130	31	80.7	19.3
18. Stayman	38	123	23.6	76.4
19. Others	9	152	5.6	94.4

B-6. Which of the previously stated varieties did you purchase during 1993? (Circle all that apply)

	Number		Percent	
	Purchase	No Purchase	Purchase	No Purchase
1. Braeburn	11	150	6.8	93.2
2. Cortland	16	145	9.9	90.1
3. Criterion	3	158	1.9	98.1
4. Empire	8	153	5.0	95.0
5. Fuji	26	135	16.1	83.9
6. Gala	42	119	26.1	73.9
7. Golden Delicious	118	43	73.3	26.7
8. Granny Smith	92	69	57.1	42.9
9. Ida Red	11	150	6.8	93.2
10. Jonagold	11	150	6.8	93.2
11. Jonathan	73	88	45.3	54.7
12. McIntosh	64	97	39.8	60.2
13. Melrose	9	152	5.6	94.4
14. Mutsu	3	158	1.9	98.1
15. Paula Red	3	158	1.9	98.1
16. Red Delicious	125	36	77.6	22.4
17. Rome Beauty	52	109	32.3	67.7
18. Stayman	10	151	6.2	93.8
19. Others	4	157	2.5	97.5

B-7. If Ohio were to specialize in the production of a particular apple variety, which apple variety would you suggest?

	N	%
Red Delicious	36	30.8
Golden Delicious	18	15.4
Gala	11	9.4
Jonathan	9	7.7
Granny Smith	8	6.8
McIntosh	7	6.0
Fuji	5	4.3
Rome Beauty	5	4.3
Don't Know	4	3.4
Cortland	3	2.6
Braeburn	2	1.7
Stayman	2	1.7
Melrose	2	1.7
Criterion	1	0.9
Ida Red	1	0.9
Ruset	1	0.9
Winesap	1	0.9
Mutsu	1	0.9
Total	117	100.0

B-8. In your opinion, what is the best tasting Ohio-grown apple variety?

	N	%
Golden Delicious	20	21.3
Red Delicious	17	18.1
Don't Know	13	13.8
Jonathan	11	11.7
Granny Smith	7	7.4
Gala	6	6.4
McIntosh	5	5.3
Cortland	4	4.3
Rome Beauty	3	3.2
Fuji	2	2.1
Melrose	2	2.1
Criterion	1	1.1
Winesap	1	1.1
Mutsu	1	1.1
Stayman	1	1.1
Total	94	100.0

B-9. For each variety of apples you purchased in 1993, approximately what percent of total purchases did each variety represent? (Include the estimated percentage for each variety - total should equal to 100).

	N	%
1. Braeburn	9	24.4
2. Cortland	16	11.8
3. Criterion	4	6.3
4. Empire	4	3.0
5. Fuji	24	23.1
6. Gala	34	22.7
7. G. Delicious	109	29.7
8. G. Smith	79	21.7
9. Ida Red	11	12.0
10. Jonagold	10	5.8
11. Jonathan	63	13.5
12. McIntosh	46	13.3
13. Melrose	11	9.3
14. Mutsu	4	5.0
15. Paula Red	4	3.7
16. Red Delicious	121	42.8
17. Rome Beauty	43	11.1
18. Stayman	11	12.0
19. Others	7	8.6

COMMENTS:
The "other" varieties of apples listed were Russet, Grimes, Golden, Weathy, Yellow Transparent.

B-10. Washington State is best known for its Red and Golden Delicious apples. In your opinion, which variety is Ohio best known for?

	N	%
Don't Know	37	42.0
Red Delicious	13	14.8
Jonathan	12	13.6
Rome Beauty	7	8.0
Golden Delicious	7	8.0
McIntosh	4	4.5
Codi	2	2.3
Fuji	2	2.3
Melrose	2	2.3
Winesap	1	1.1
Granny Smith	1	1.1
Total	88	100.0

B-11. How would you rank the importance of the following factors in selecting an apple variety to purchase? (1 indicates the lowest, 5 indicates the highest).

	Low Importance						High Importance				Total
	1		2		3		4		5		
	N	%	N	%	N	%	N	%	N	%	
1. Color	11	7.2	9	5.9	39	25.5	58	37.9	36	23.5	153
2. Size	9	5.8	18	11.6	51	32.9	54	34.8	23	14.8	155
3. Shape	19	12.5	28	18.4	49	32.2	42	27.6	14	9.2	152
4. Shine	25	16.9	33	22.3	46	31.1	29	19.6	15	10.1	148
5. Skin condition	1	0.6	8	5.2	19	12.3	58	37.4	69	44.5	155
6. Firmness	1	0.6	0	0.0	11	7.1	37	23.7	107	68.6	156
7. Taste	0	0.0	0	0.0	0	0.0	12	7.7	144	92.3	156
8. Cooking ability	23	15.1	35	23.0	33	21.7	25	16.4	36	23.7	152
9. Vitamins	10	6.8	18	12.2	43	29.3	39	26.5	37	25.2	147
10. Overall Quality	3	2.0	0	0.0	9	5.9	45	29.6	95	62.5	152

B-12. In your opinion, is the flavor of an apple directly related to its color?

	N	%
1. No	115	72.3
2. Yes	24	15.1
3. Don't know	20	12.6
Total	159	100.0

B-13. How would you rank your satisfaction with the apples you purchase? (1 is least satisfied; 5 is most satisfied).

Satisfaction										
Least								Most		
1		2		3		4		5		Total
N	%	N	%	N	%	N	%	N	%	
4	2.5	3	1.9	26	16.3	96	60.0	31	19.4	160

B-14. In general, how many apples per day do you consume during the following seasons?

	Apples Eaten Per Day												
	0		1		2		3		4		5		Total
	N	%	N	%	N	%	N	%	N	%	N	%	
Fall(Sept-Nov)	11	7.1	88	56.4	37	23.7	15	9.6	3	1.9	2	1.3	156
Winter(Dec-Feb)	28	18.5	93	61.6	21	13.9	5	3.3	3	2.0	1	0.7	151
Spring(Mar-Jun)	32	21.3	94	62.7	18	12.0	5	3.3	1	0.7	0	0.0	150
Summer(Jul-Aug)	39	26.2	81	54.4	18	12.1	9	6.0	2	1.3	0	0.0	149

B-15. In general, how many apples per day does your family consume during the following seasons?

	Apples Eaten Per Day												
	0		1		2		3		4		5		Total
	N	%	N	%	N	%	N	%	N	%	N	%	
Fall(Sept-Nov)	10	6.9	39	27.1	51	35.4	21	14.6	11	7.6	12	8.3	144
Winter(Dec-Feb)	18	12.8	55	39.0	35	24.8	20	14.2	9	6.4	4	2.8	141
Spring(Mar-Jun)	20	14.5	55	39.9	33	23.9	19	13.8	6	4.3	5	3.6	138
Summer(Jul-Aug)	29	21.0	48	34.8	35	25.4	13	9.4	6	4.3	7	5.1	138

B-16. In general, do you find a difference in the quality of apples from season to season?

	N	%
1. No	35	22.3
2. Yes	105	66.9
3. Don't know	17	10.8
Total	157	100.0

B-17. How would you rank the quality of apples during the following seasons: (1 is poor; 5 is excellent). Please circle the appropriate response.

	Quality										
	Poor								Excellent		
	1		2		3		4		5		Total
	N	%	N	%	N	%	N	%	N	%	
Fall(Sept-Nov)	3	1.9	3	1.9	14	9.1	34	22.1	100	64.9	154
Winter(Dec-Feb)	8	5.3	10	6.6	43	28.3	63	41.4	28	18.4	152
Spring(Mar-Jun)	9	6.0	23	15.3	66	44.0	42	28.0	10	6.7	150
Summer(Jul-Aug)	8	5.4	32	21.8	40	27.2	48	32.7	19	12.9	147

B-18. What time period best characterizes your apple consumption?

	N	%
1. Year-round	95	60.5
2. Fall only	4	2.5
3. Fall and Winter	34	21.7
4. Fall, Winter, and Spring	19	12.1
5. Other (Please specify)	5	3.2
Total	157	100.0

COMMENTS:
The "other" time period mentioned was Summer.

B-19. If you do not consume apples year-round, which of the following reasons best describe your reasons for not consuming apples year-round? (Circle all that apply).

	Number Not Consuming Year-round	Reasons Given	Reason as % of Not Consuming
1. The quality of apples deteriorates beyond the point for which you find apples acceptable.	57	24	42.1
2. Apples become a less preferred fruit when citrus and other soft fruits become widely available.	57	45	78.9
3. The outlet from which you purchase apples does not have them available year-round.	57	6	10.5
4. You do not look for apples after a certain time period because you assume they will not be available.	57	6	10.5
5. You simply lose interest in apples.	57	21	36.8

B-20. If you were to compare apples with other fruits you consume, how would you rank apples?

	N	%
1. Apples are my most preferred fruit.	46	28.9
2. Apples are my second most preferred fruit.	33	20.8
3. Apples are my third most preferred fruit.	28	17.6
4. Apples are my fourth most preferred fruit.	3	1.9
5. Apples are just one of many fruits I eat.	49	30.8
Total	159	100.0

B-21. In your opinion, are apples as good a buy for the price as other fruit?

	N	%
1. No	8	5.0
2. Yes	143	88.8
3. Don't know	10	6.2
Total	161	100.0

B-22. One observed effect of controlled atmosphere storage is that its high costs lead to slightly higher apple prices. In your opinion, is the year-round availability of apples an adequate tradeoff for slightly higher prices?

	N	%
1. No	23	15.2
2. Yes	128	84.8
Total	151	100.0

SECTION C: Economic and Socioeconomic Information

C-1. Are you the primary grocery shopper in your household?

	N	%
1. No	30	18.6
2. Yes	131	81.4
Total	161	100.0

C-2. Are you?

	N	%
1. Male	43	26.7
2. Female	117	72.7
Total	160	99.4

C-3. What is the highest level of education that you attained?

	N	%
1. Did not attend high school	0	0.0
2. Completed some high school	9	5.6
3. High school graduate	26	16.1
4. Completed some college-level education	59	36.6
5. College graduate	40	24.8
6. Completed some graduate-level education	8	5.0
7. Graduate or professional degree	19	11.8
Total	161	100.0

C-4. Do you have children in your household?

	N	%
1. No ... If no, skip to question C-6	87	56.1
	68	43.9
2. Yes ... If yes, complete the following questions		
Total	155	100.0

C-5. If you have children in your household (ages 5 and above), how would you compare your consumption of fruit with theirs?

	N	%
1. My consumption is about the same as theirs	20	29.4
2. My consumption exceeds theirs	23	33.8
3. My consumption is less than theirs	20	29.4
4. Cannot compare	5	7.4
Total	68	100.0

C-6. Which of the following age groups represent your age?

	N	%
1. under 20	2	1.3
2. 21 - 30	15	9.4
3. 31 - 40	38	23.9
4. 41 - 50	36	22.6
5. 51 - 60	32	20.1
6. over 60	36	22.6
Total	159	100.0

C-7. Which of the following income categories represent your household (all wage earners) income?

	N	%
1. under $30,000	27	18.5
2. $30,001 - $45,000	36	24.7
3. $45,001 - $60,000	34	23.3
4. $60,001 - $75,000	17	11.6
5. $75,001 - $90,000	14	9.6
6. $90,001 - $105,000	8	5.5
7. above $105,000	10	6.8
Total	146	100.0

APPENDIX II

Fig A-1. Outlets From Which Consumers Purchase Most of Their Apples

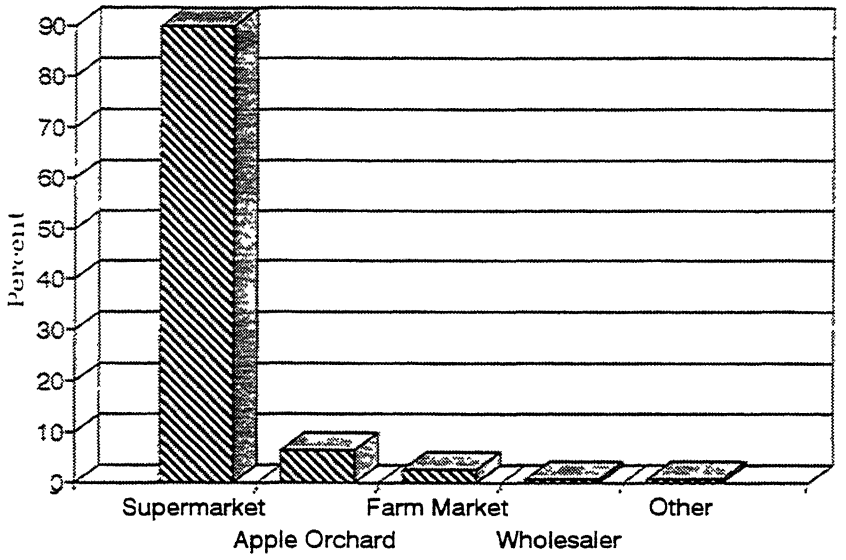


Fig A-2. Do Consumers Buy Apples From More Than One Outlet During The Year?

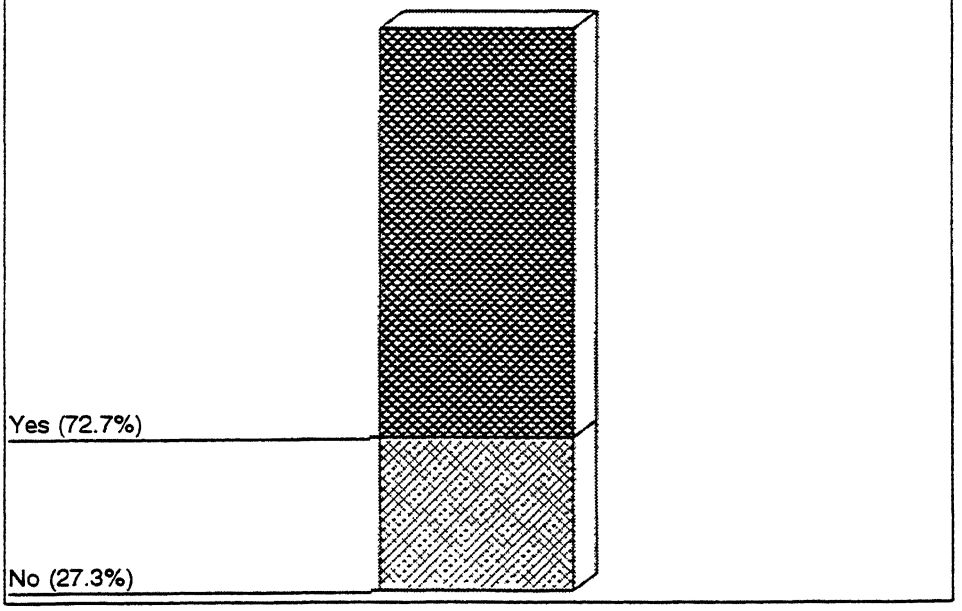


Fig A-3. Do Consumers Change Purchases of Apples From Season to Season?

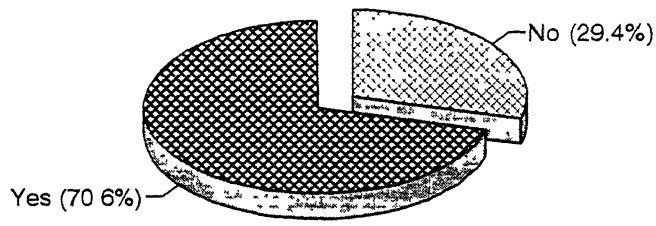


Fig A-4. Reasons Consumers Give For Changing Market Outlets During A Year

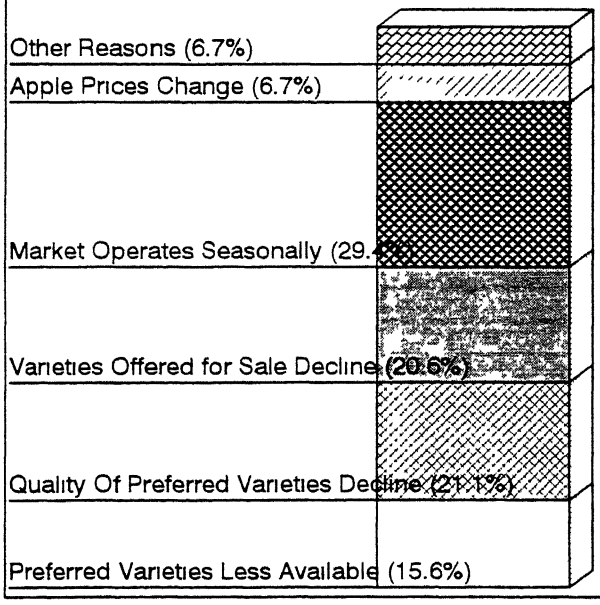


Fig A-6. Do Consumers Find Differences In Apple Quality By Market Outlet?

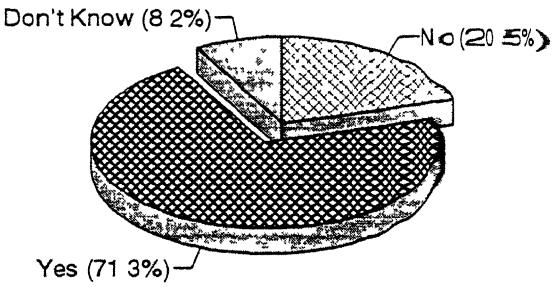


Fig A-7. Which Market Offers The Highest Quality of Apples?

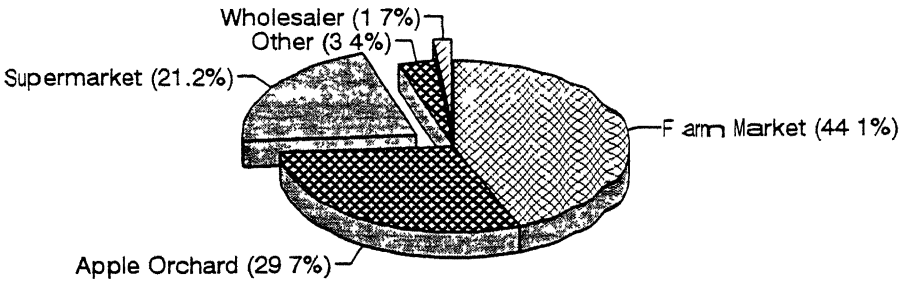


Fig A-8. Most Important Factors In Determining One's Market Selection

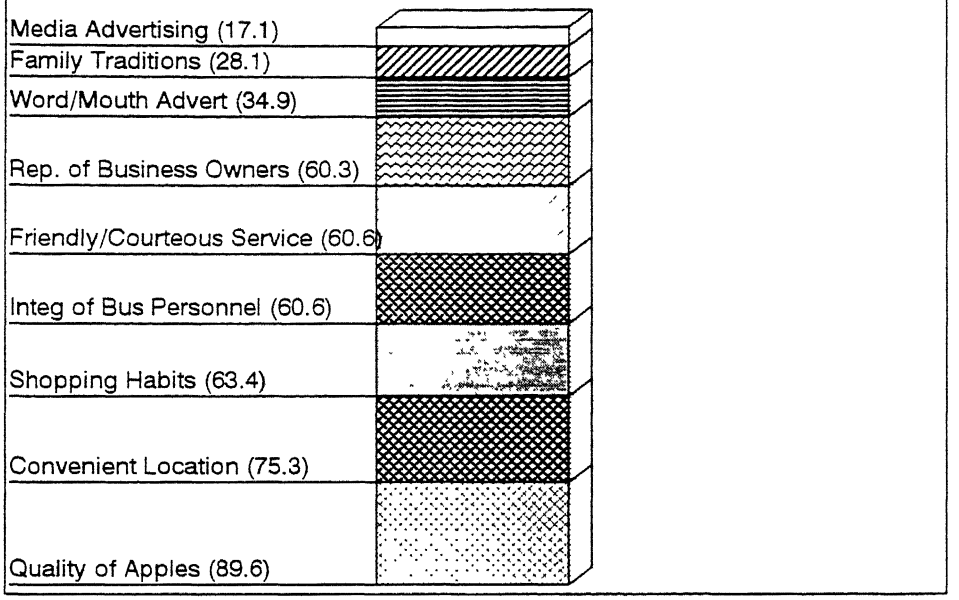


Figure A-9. Are Consumers' Purchases of Apples Influenced by Advertising?

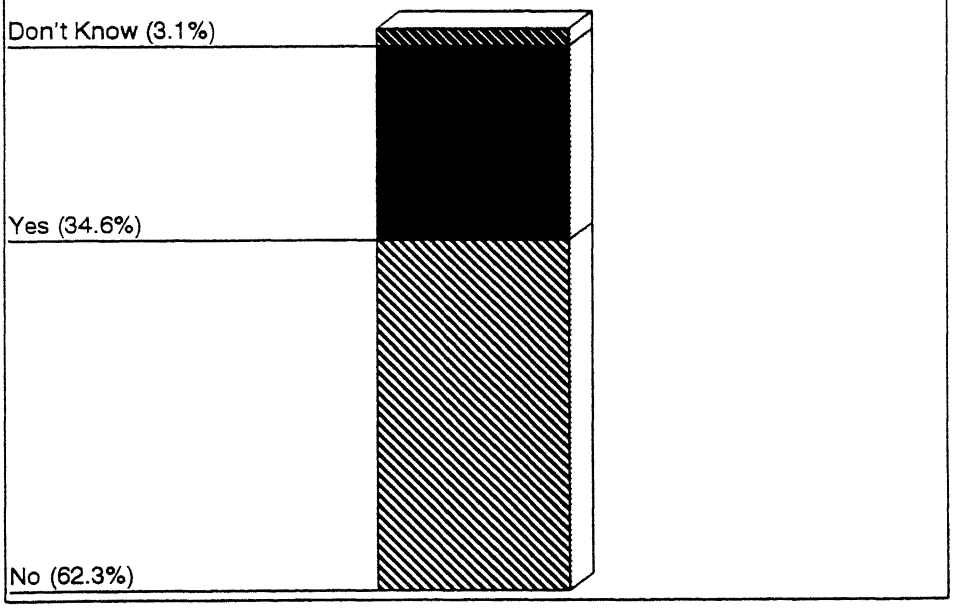


Fig A-11. Does The Shine of An Apple Influence Consumer Purchases?

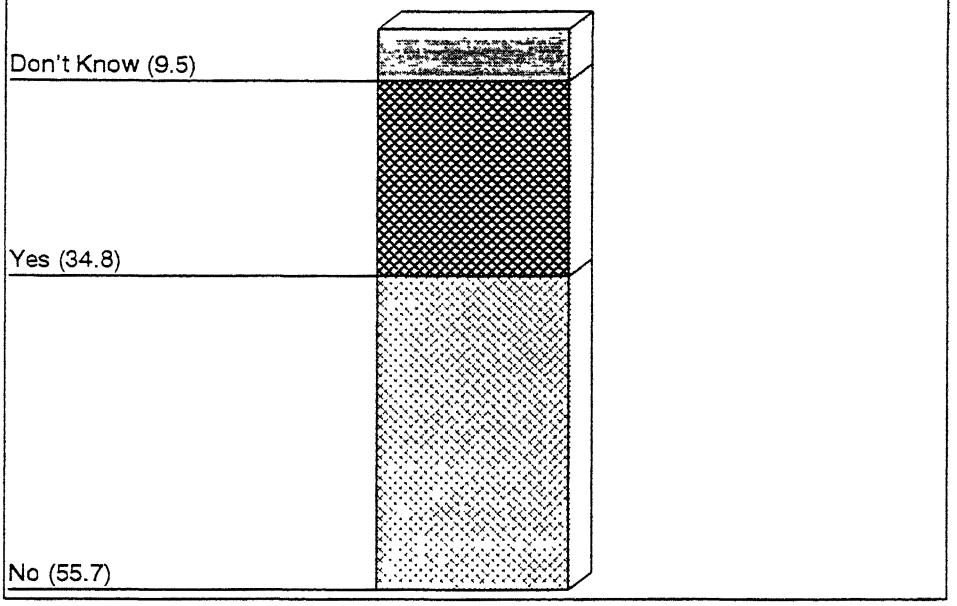


Fig A-12. What Effect Does The Shine Of An Apple Have On Consumer Purchases?

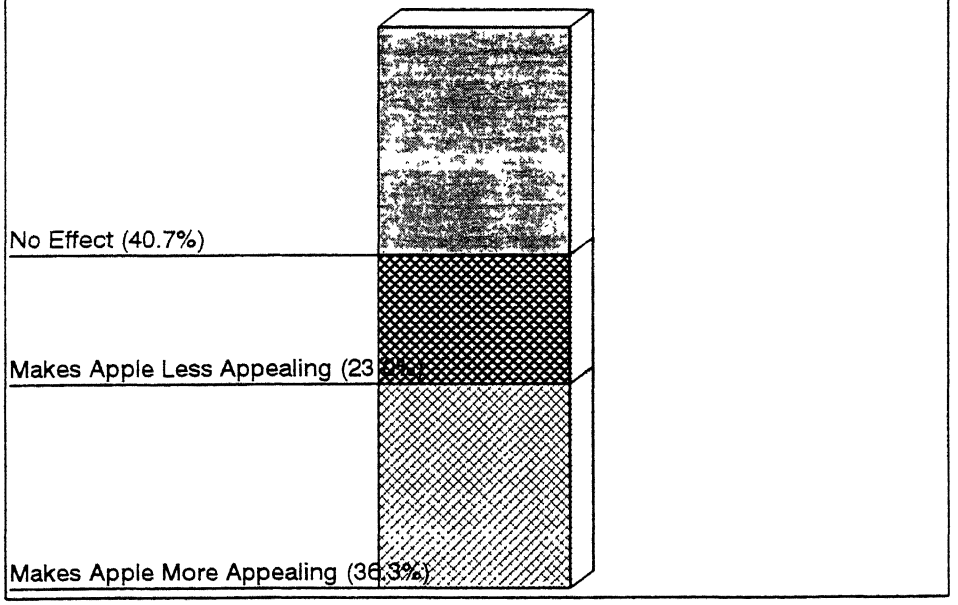


Fig A-13. Do Consumers Sometimes Change Their Apple Purchase Plans?

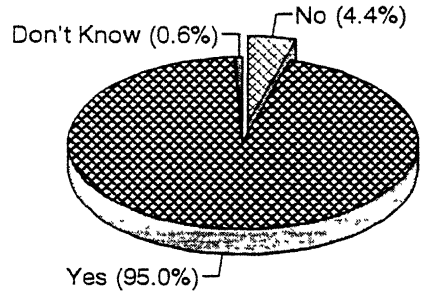


Fig A-15. Top Five Quality Problems Consumers Find With Apples

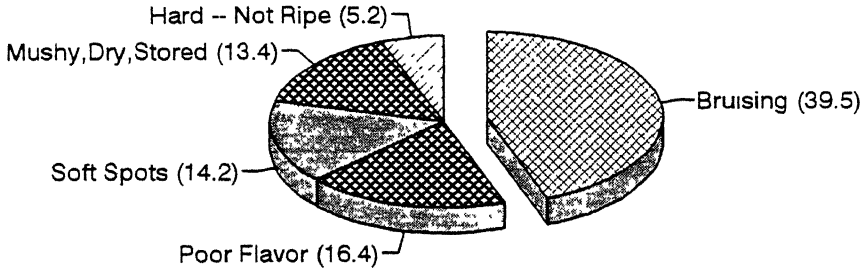


Fig A-16. Does It Matter To Consumers Where Apples Are Grown?

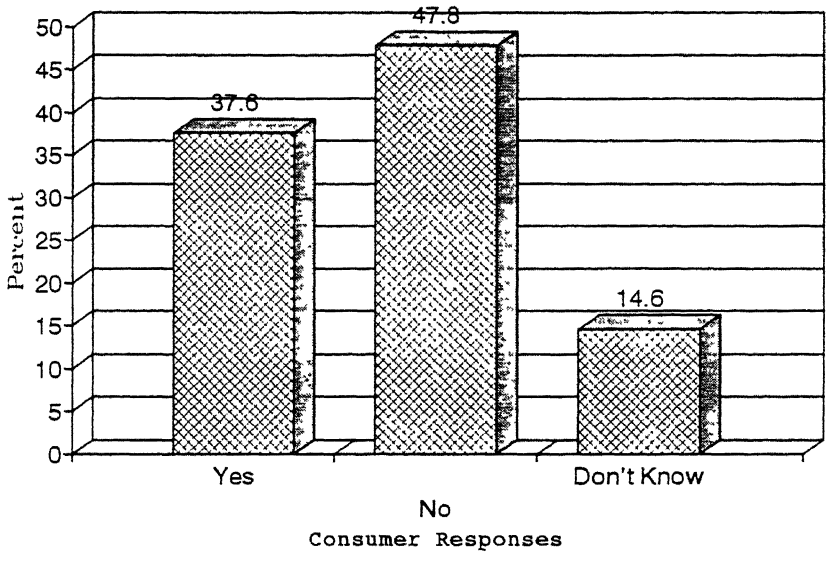


Fig A-17. How Do Consumers Purchase Their Apples?

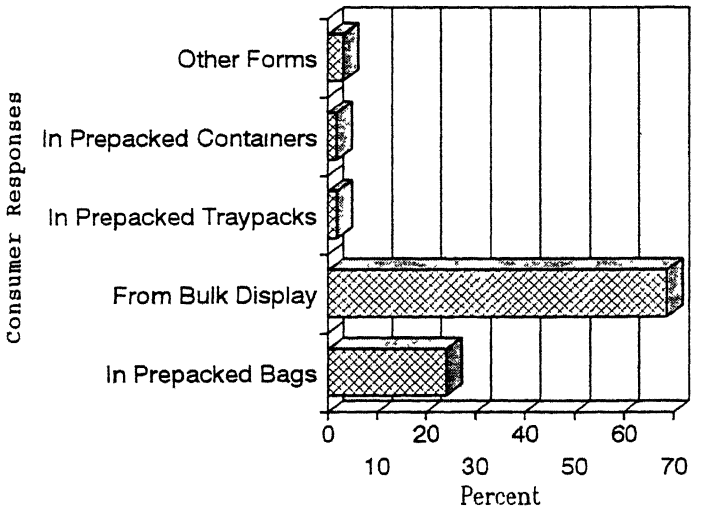


Fig A-18. Are Consumers Satisfied With Available Purchase Options for Apples?

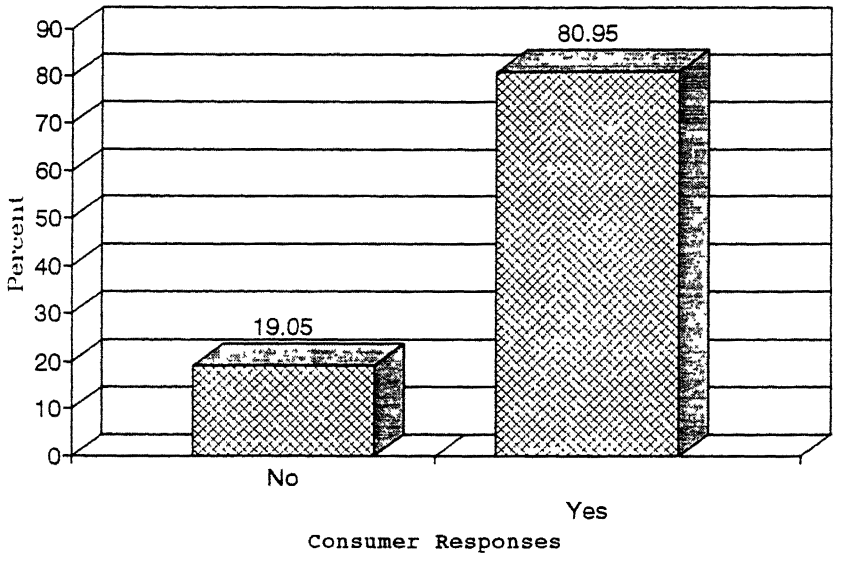


Fig A-19. How Do Consumers Rank The Overall Quality of Apples?

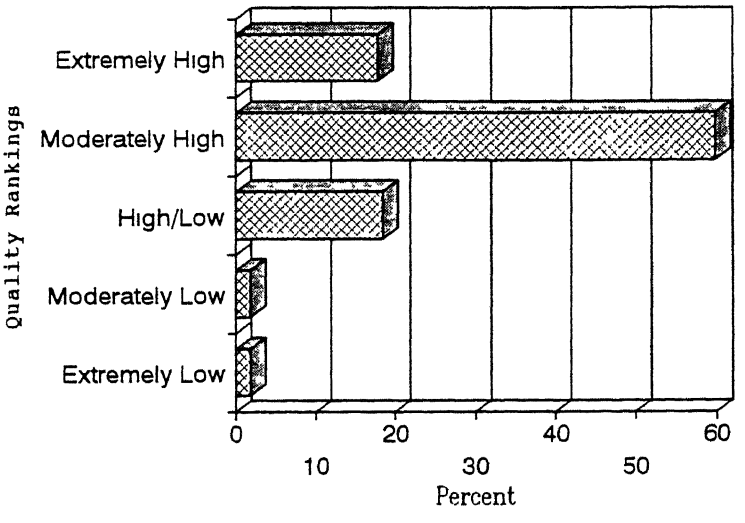


Fig A-20. How Do Consumers Rank Apples Relative To Other Fruit?

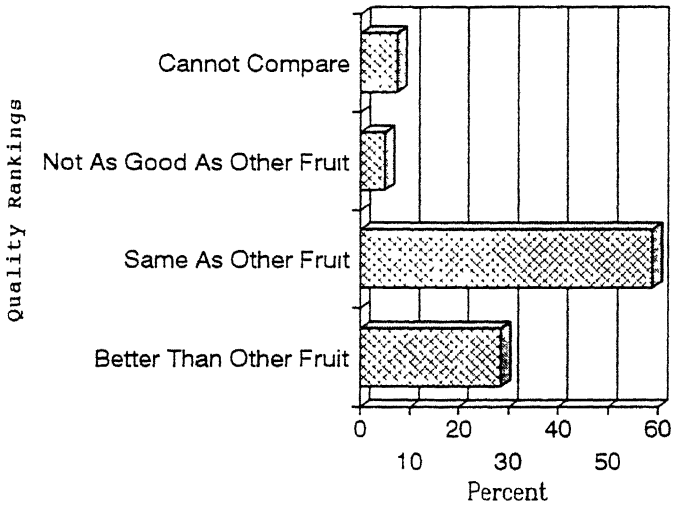


Fig A-21. Do Consumers Realize They Sometimes Purchase Ohio-Grown Apples?

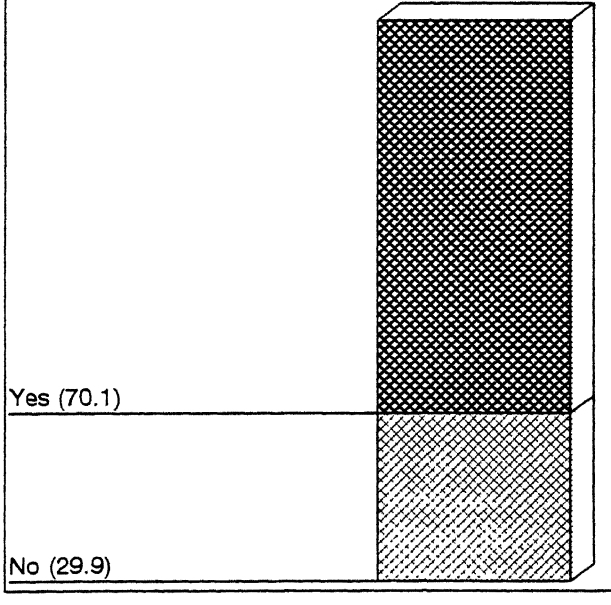


Fig A-22. Do Consumers Sometimes Look For Ohio-Grown Apples to Purchase?

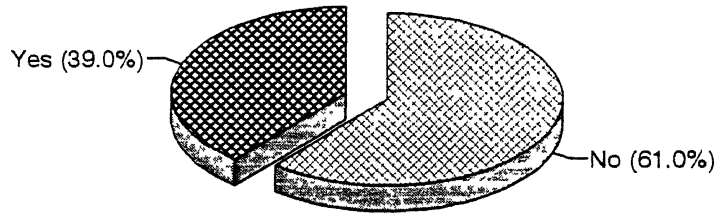


Fig A-23. How Do Consumers Rank The Overall Quality of Ohio-Grown Apples?

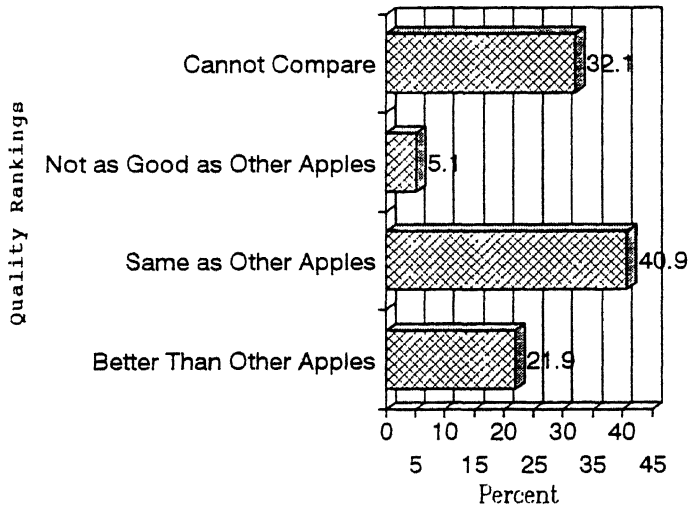


Fig A-24. How Do Consumers Rank Ohio & Wash Apples in Side-By-Side Displays?

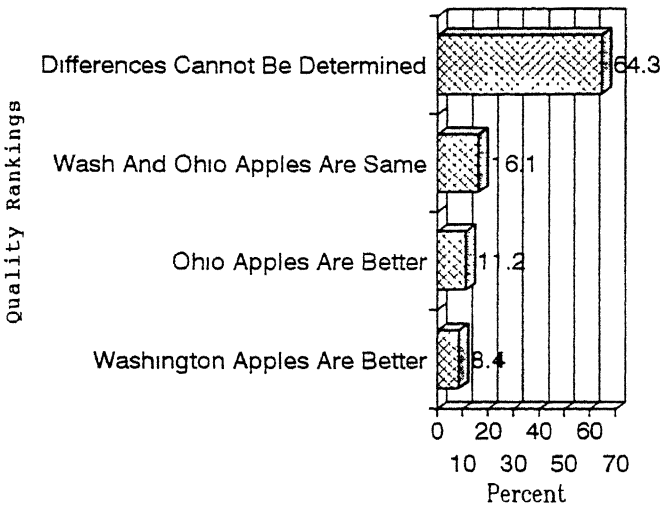


Fig A-25. Are Consumers Aware Of The 5-A-Day Program for Better Health?

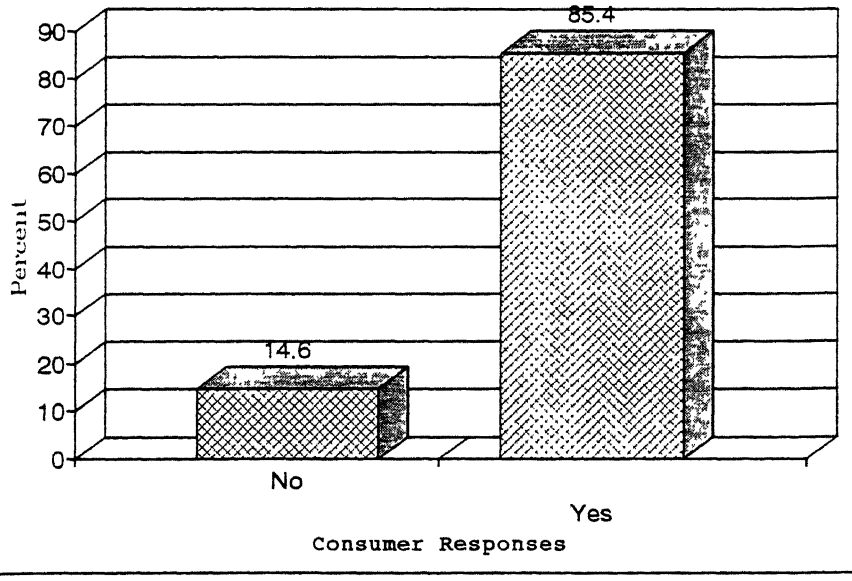


Fig A-26. Impact of 5-A-Day Program On Consumers' Consumption of Apples

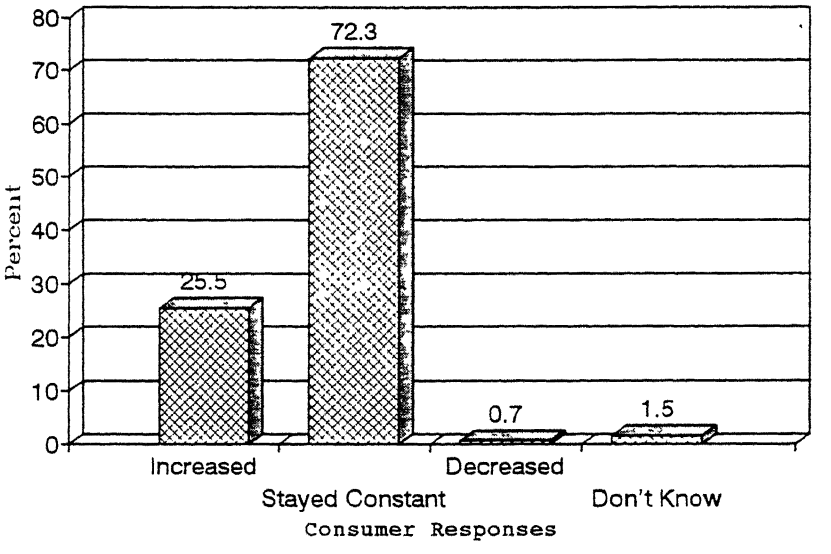


Fig A-27. 5-A-Day Impact On Consumers' Consumption of Apple Products

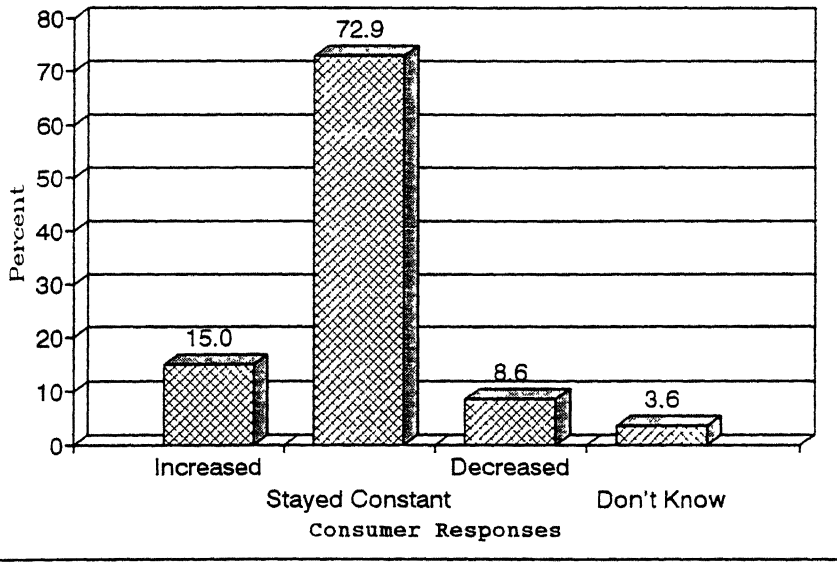


Fig A-28. Future Impact Of 5-A-Day On Consumers' Consumption Of Apples

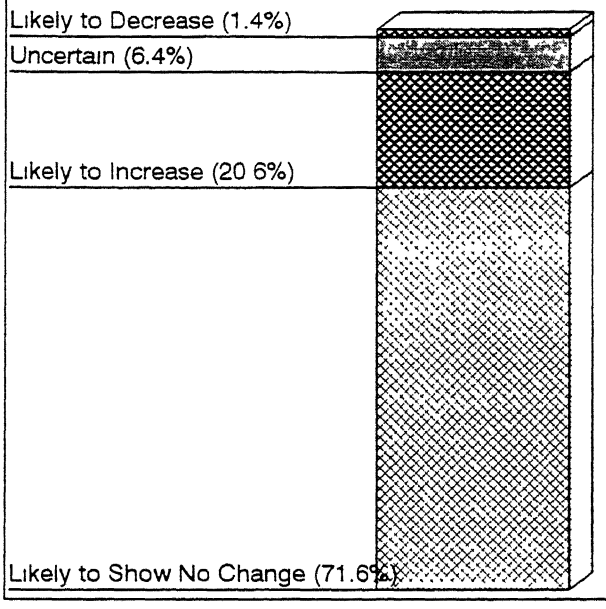


Fig A-29. Share Of Fat In A Person's Diet Which Comes From Apples

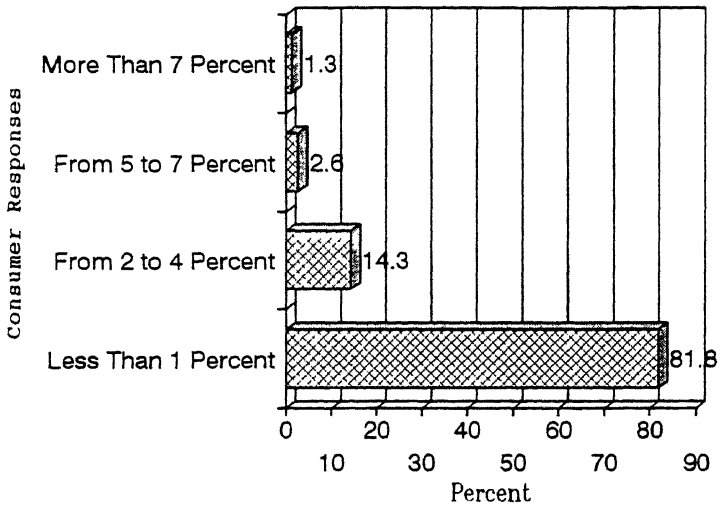


Fig A-30. Share Of Fat In A Family's Diet Which Comes From Apples

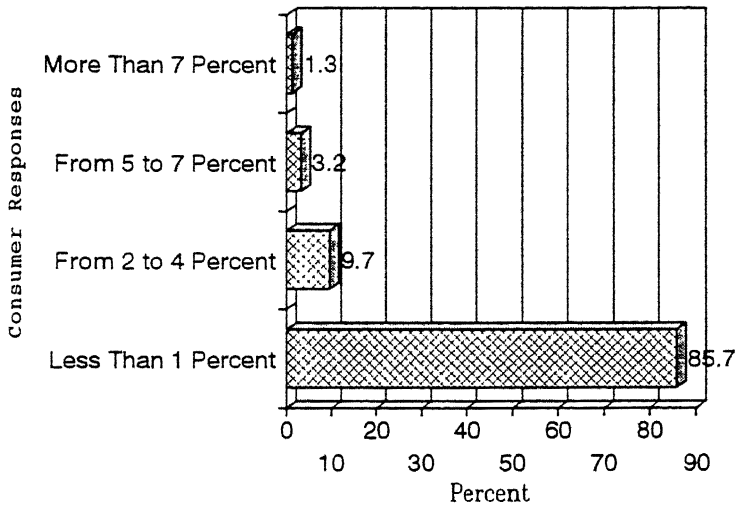


Fig A-31. Have Pesticide Concerns Impacted Consumers' Apple Consumption?

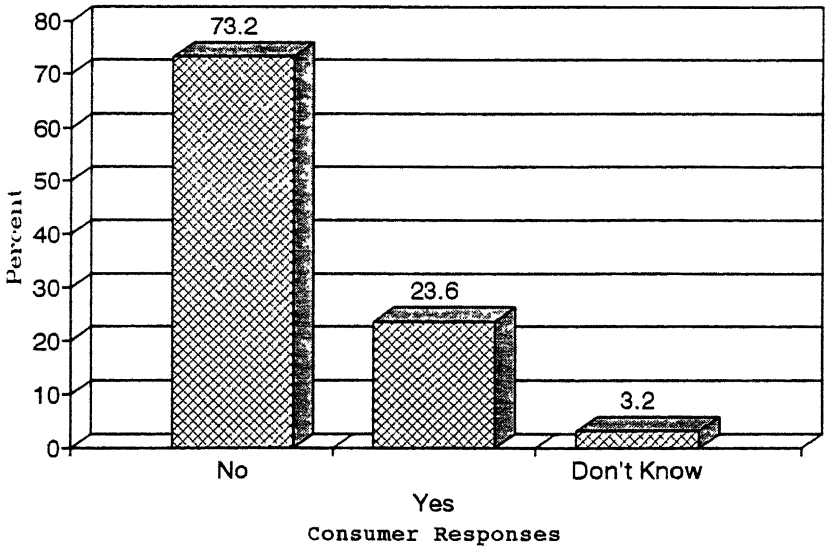


Fig B-1. Do Consumers Know Controlled Atmosphere Storage Can Keep Apples?

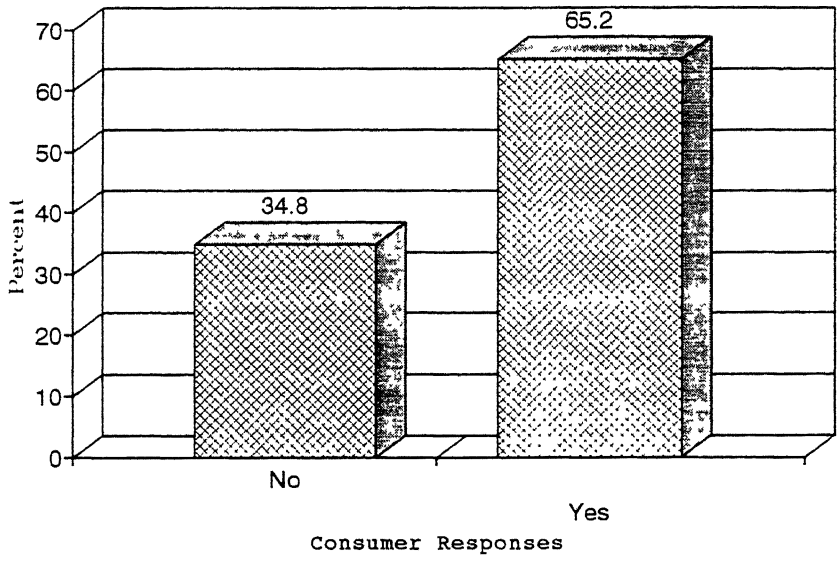


Fig B-2. Do Consumers Know Controlled Atmosphere Storage Do Keep Apples?

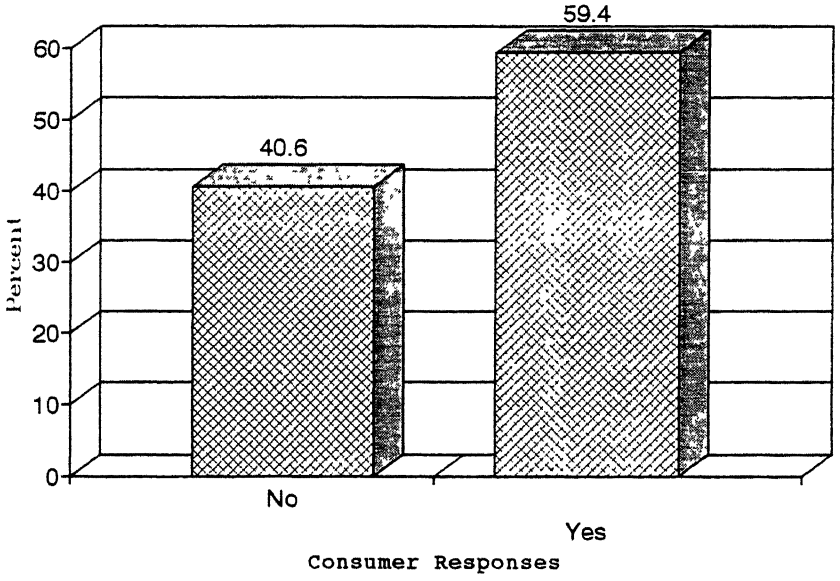


Fig B-3. Would Better Knowledge Of CA Storage Extend Consumers' Purchases?

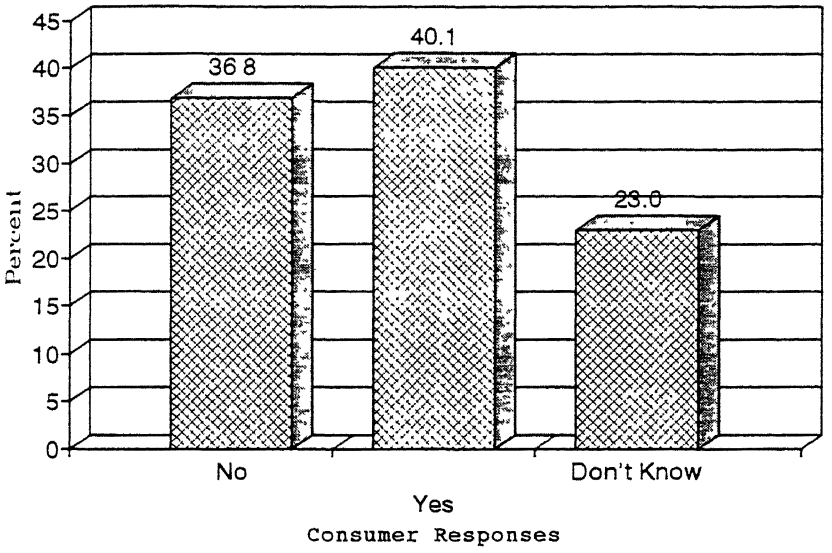


Fig B-4. Are Consumers Willing To Pay For Likely CA Price Effects On Apples?

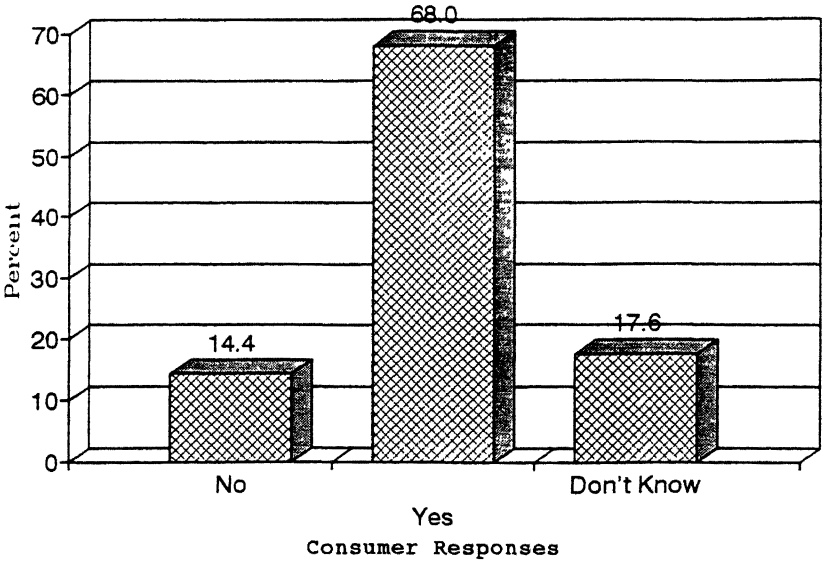


Fig B-5. Percent Of Respondents With Familiarty With These Apple Varieties

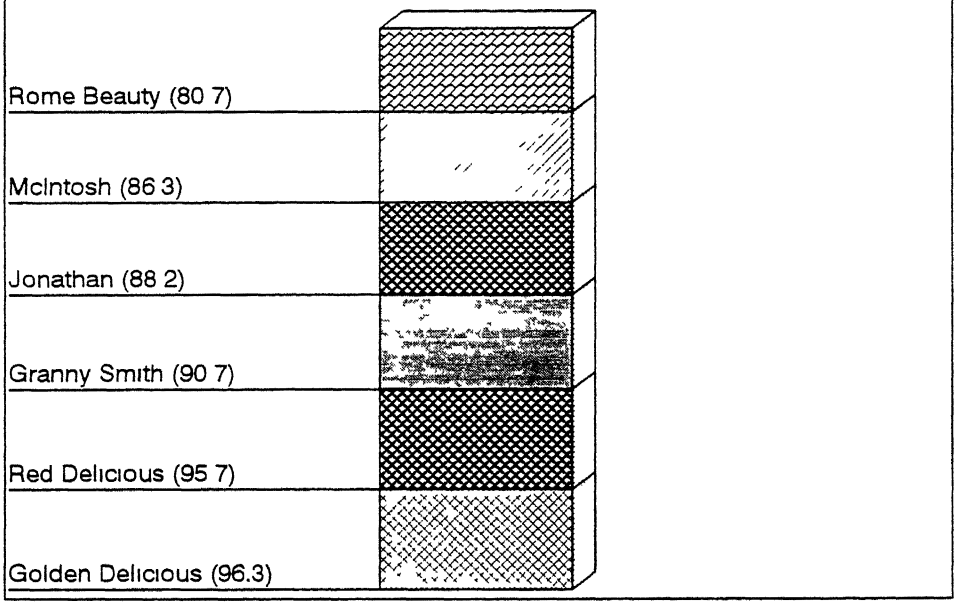


Fig B-6. Top 6 Purchased Varieties and Percent of Consumers Purchasing Them

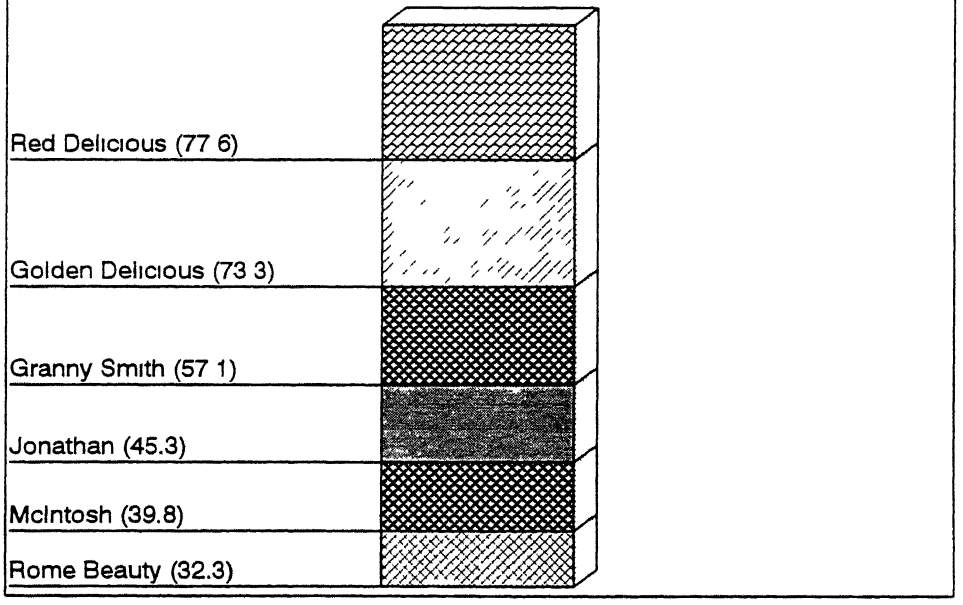


Fig B-7. Top Six Suggested Apple Varieties For State Specialization

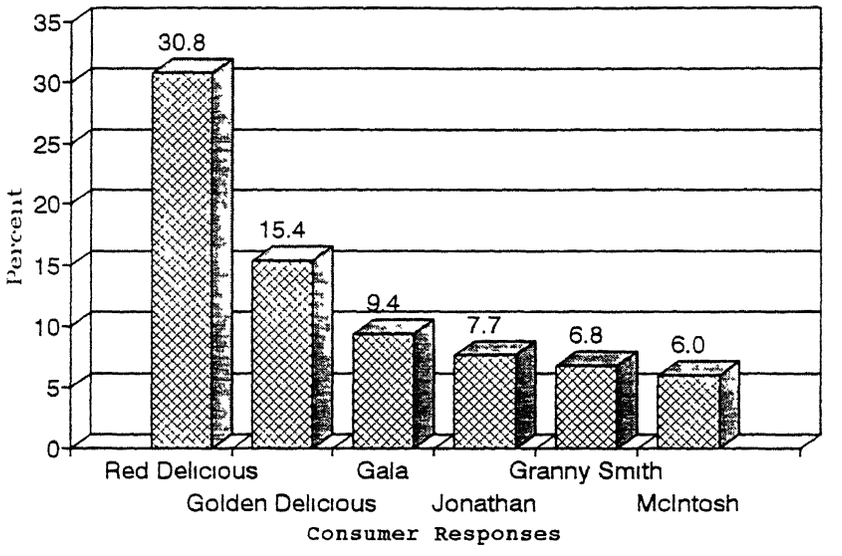


Fig B-8. Consumer Selection of The Best Tasting Ohio-Grown Apple Varieties

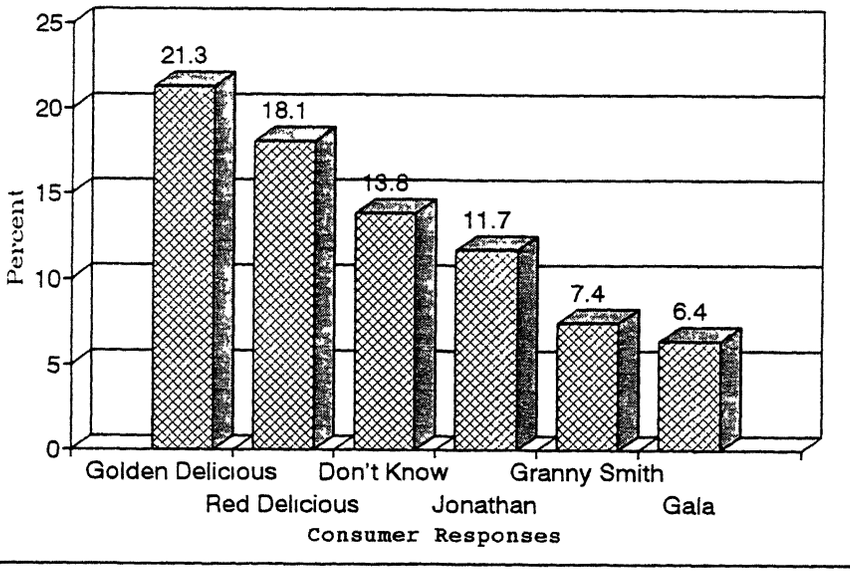


Fig B-9. Number of Respondents Buying Six Varieties & The Percent Purchased

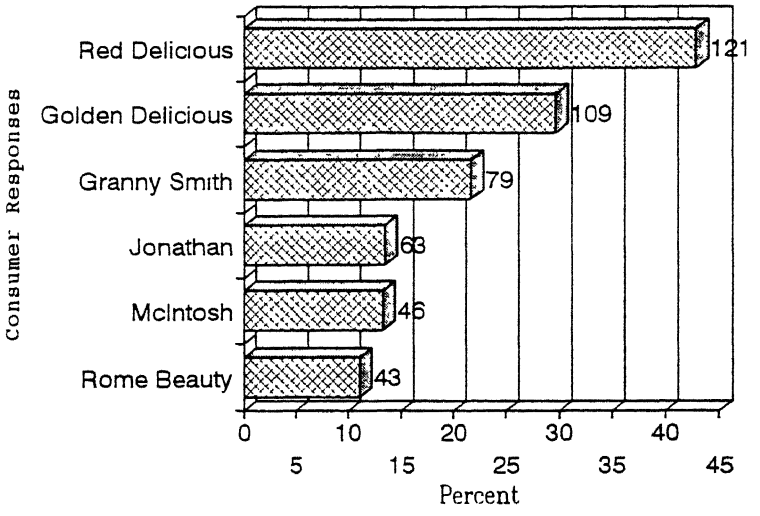


Fig B-10. Consumer Selection of Ohio's Best-Known Apple Varieties

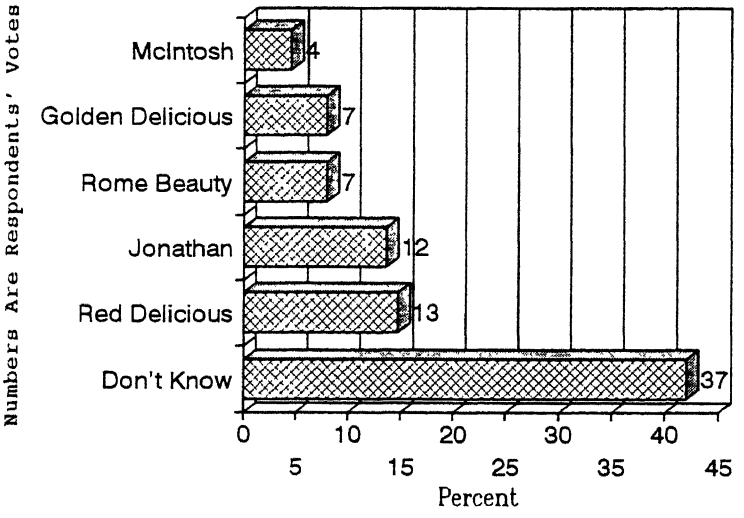


Fig B-11. Consumers' Highest Rankings For 9 Factors in Selecting An Apple

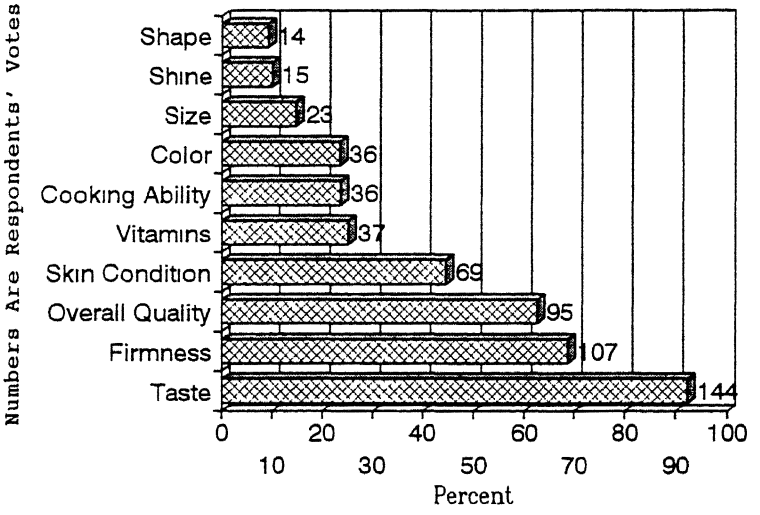


Fig B-12. Do Consumers Feel An Apple's Flavor Is Directly Related To Its Color

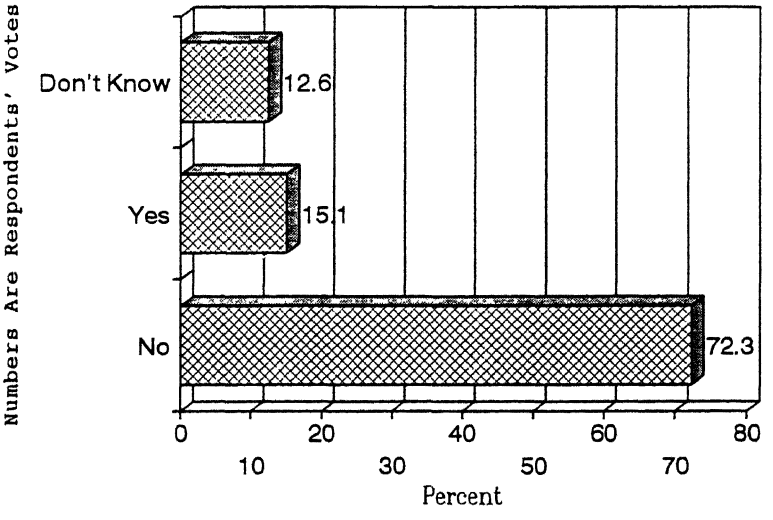


Fig B-13. Consumers' Rankings of Apples From least (1) To Most (5) Satisfied

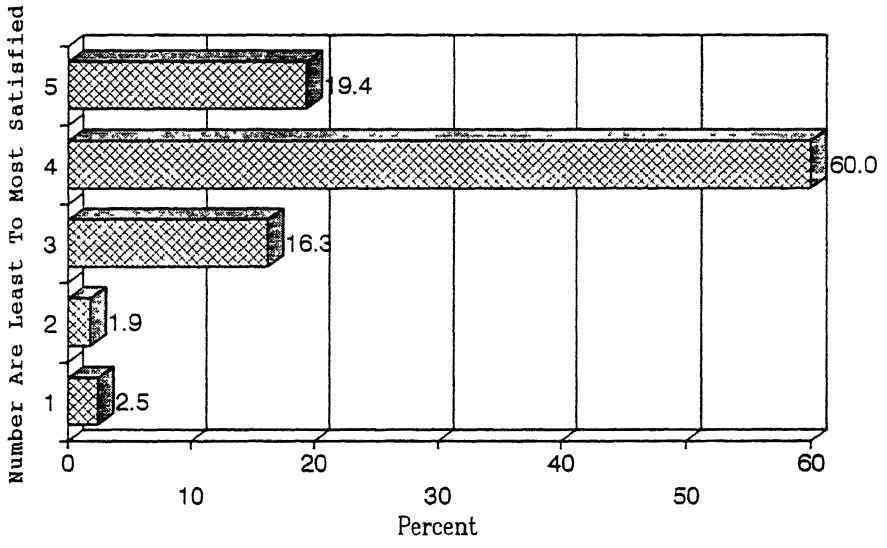


Fig B-14. Average Number Of Apples Eaten By Consumers During Each Season

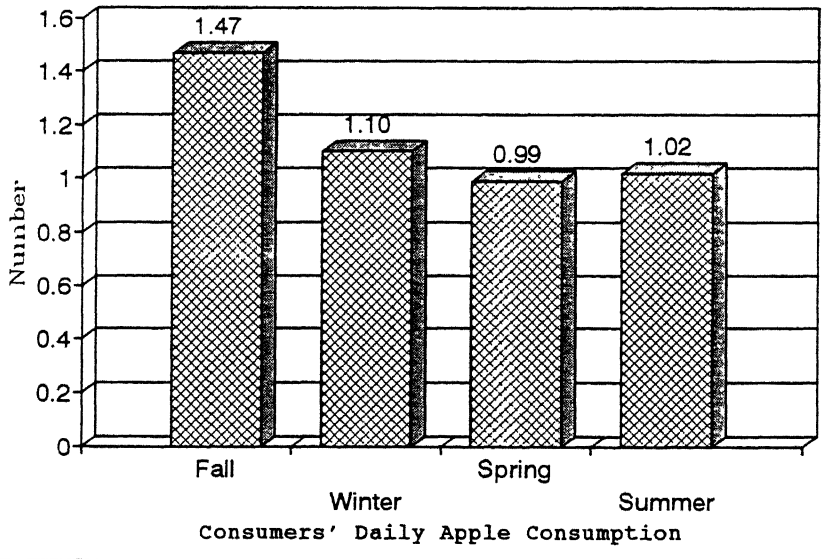


Fig B-15. Average Number Of Apples Eaten By Families During Each Season

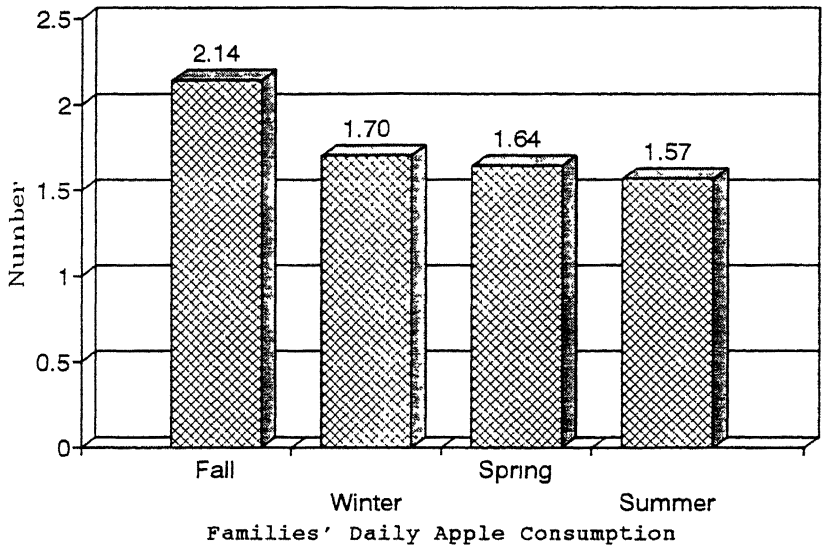


Fig B-16. Do Consumers See Changes In Apple Quality From Season To Season?

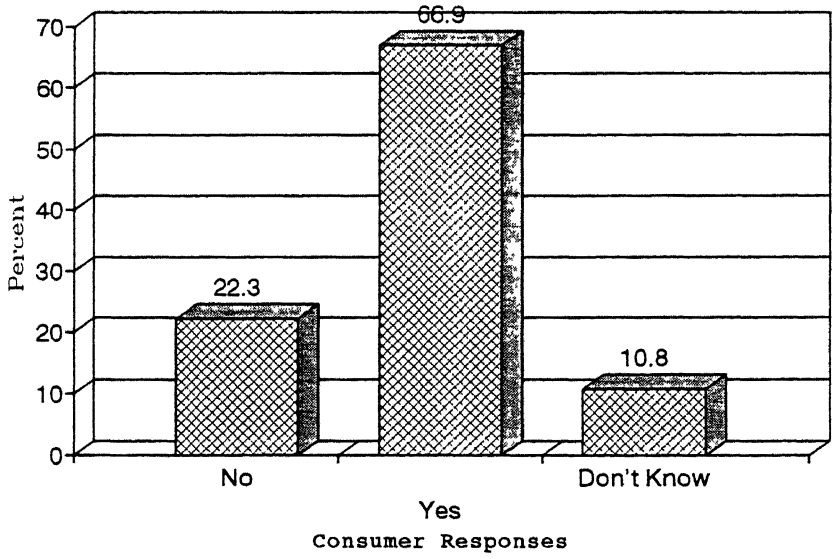


Fig B-17. Consumers' Average Quality Rankings For Apples By Season

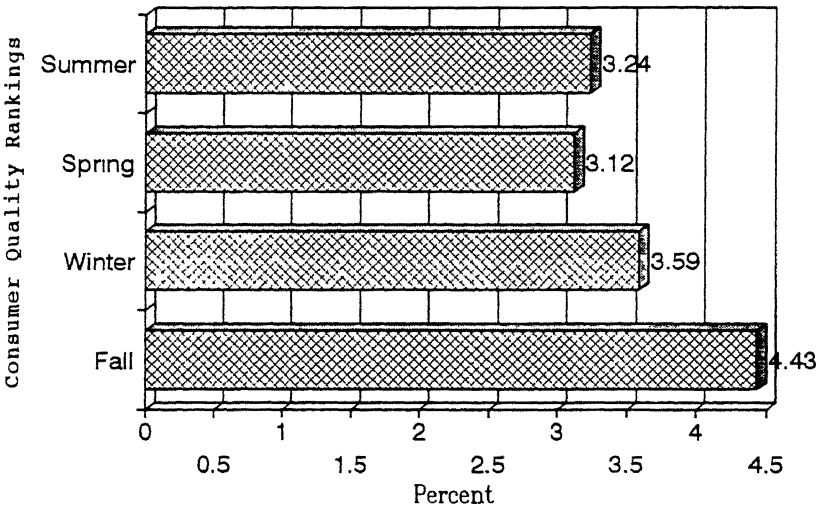


Fig B-18. What Seasons Best Describe Apple Consumption For Consumers?

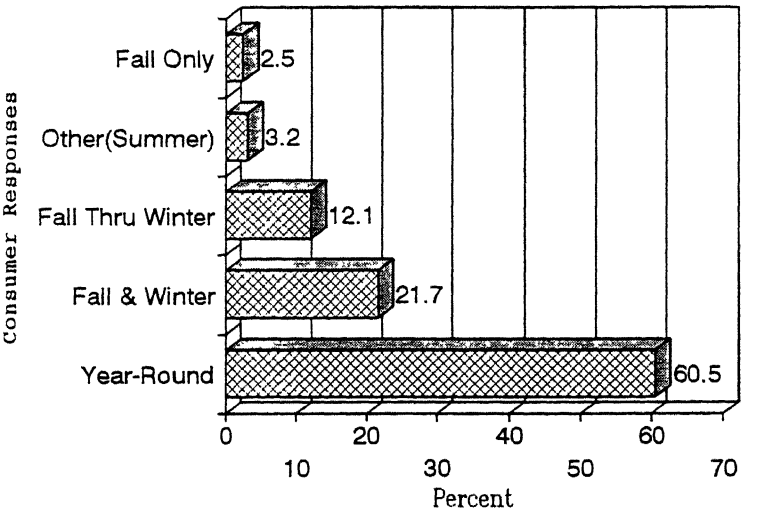


Fig B-19. Reasons Consumers Give For Not Consuming Apples Year-Round

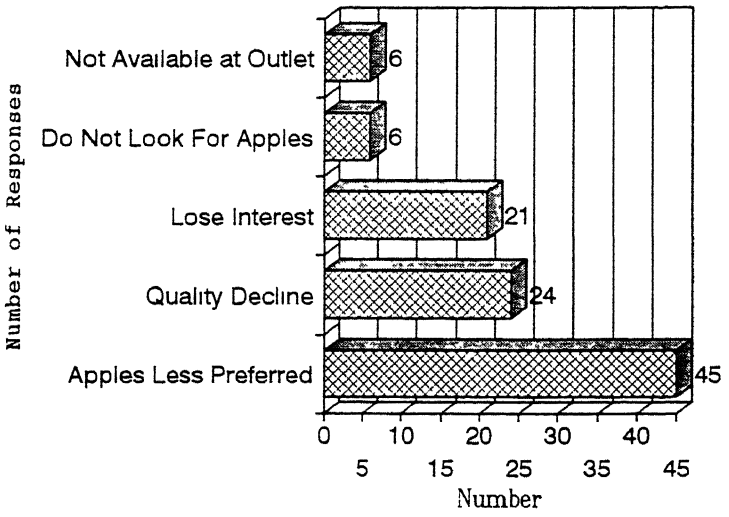


Fig B-20. How Consumers Rank Apples As Compared To Other Fruit

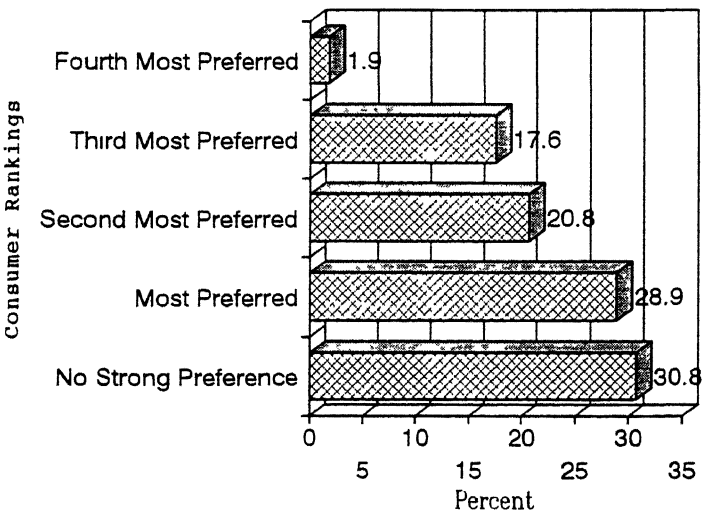


Fig B-21. Are Apples As Good A Buy For Consumers As Other Fruits?

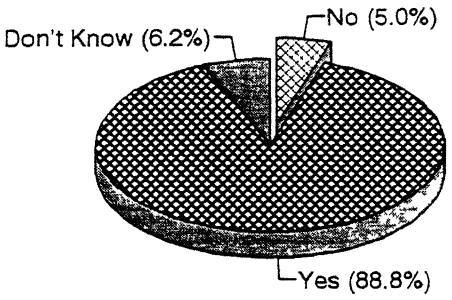


Fig B-22. Are Consumers Willing To Pay Higher Apple Prices For CA Availability

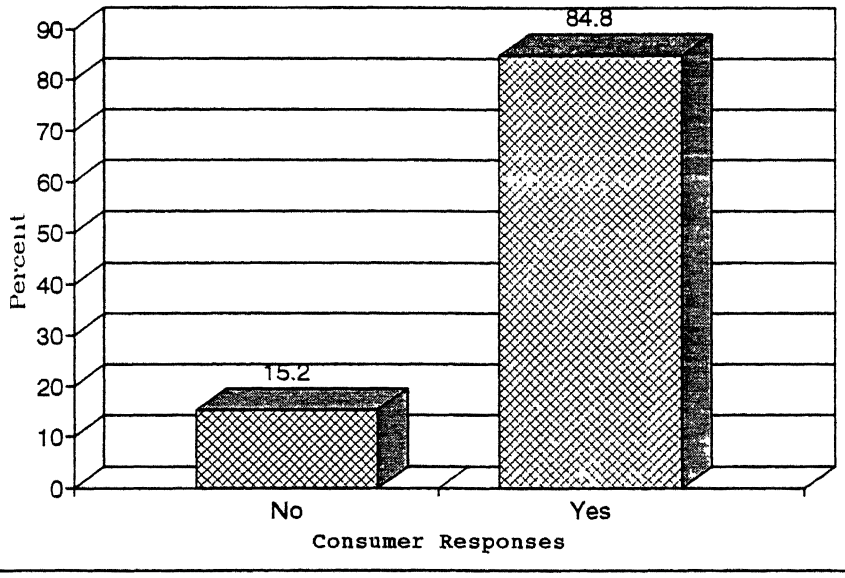


Fig C-1. Did Primary Grocery Shopper Complete This Survey?

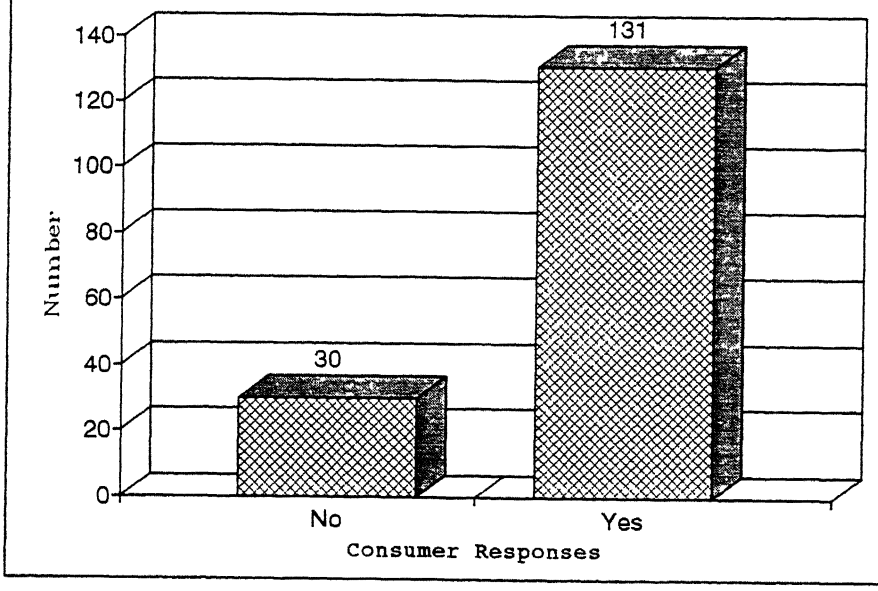


Fig C-2. Gender Distribution Of Those Completing This Apple Marketing Survey

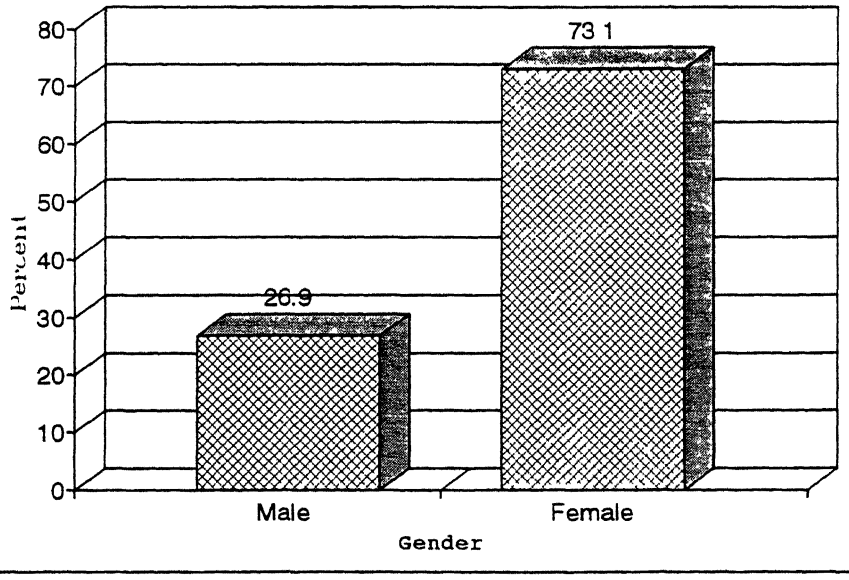


Fig C-3. Educational Attainment Of Those Completing This Apple Survey

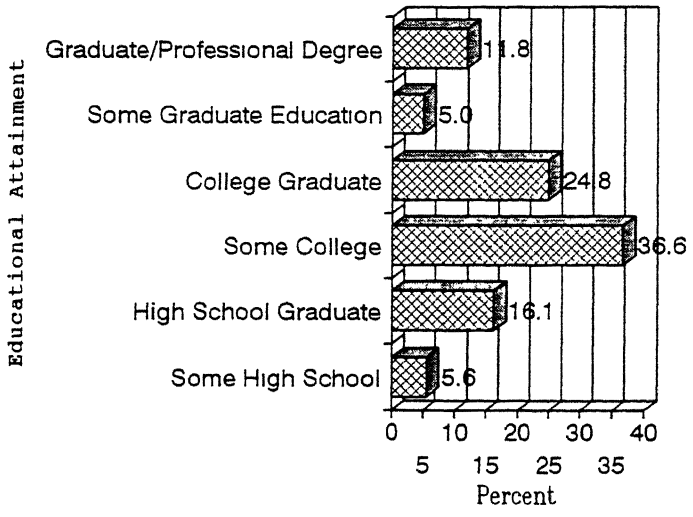


Fig C-4. Share Of Households With And Without Children

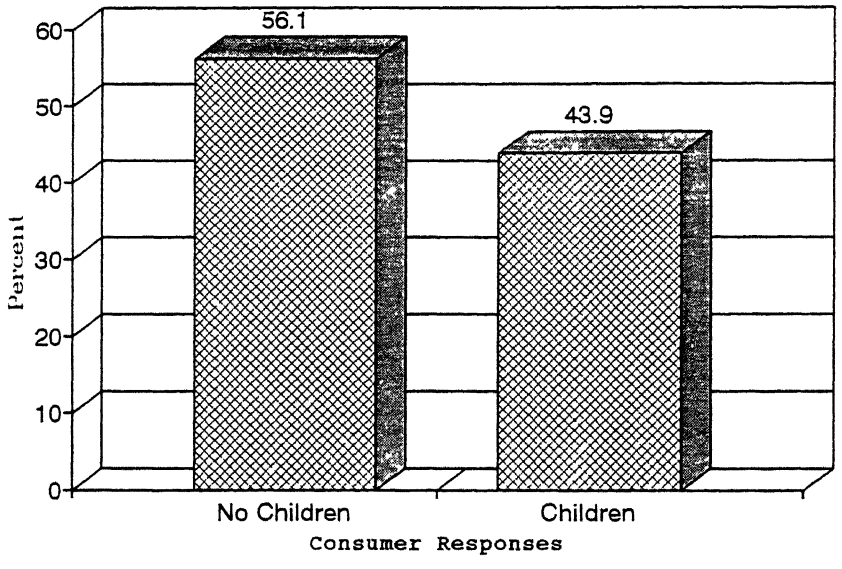


Fig C-5. How Adults' Consumption of Fruit Compares With That of Children

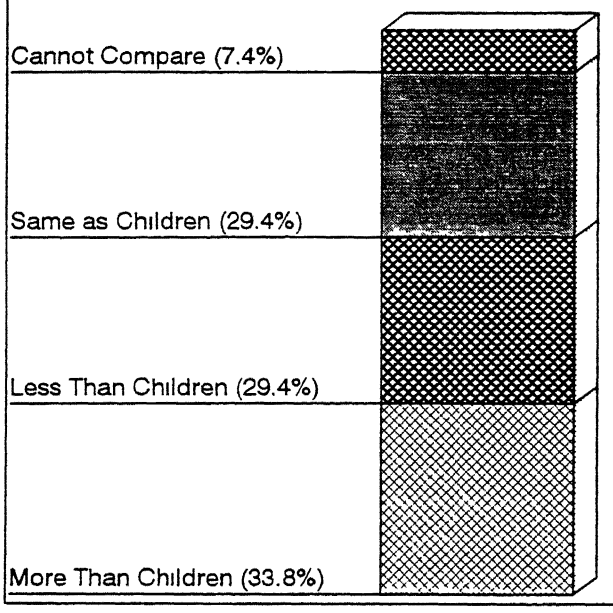


Fig C-6. Age Distribution of Those Completing This Apple Marketing Survey

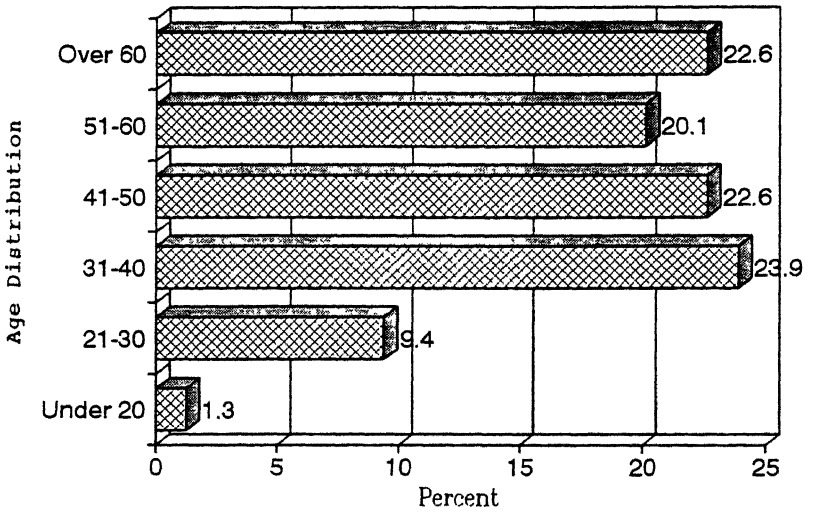
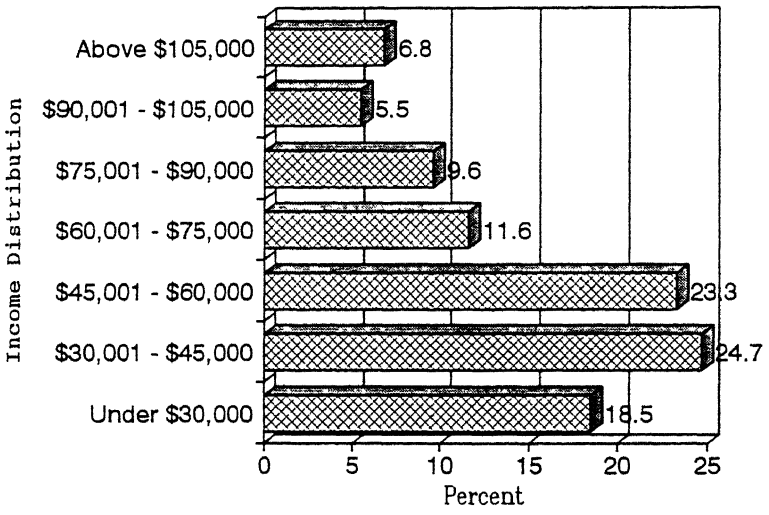


Fig C-7. Income Distribution of Those Completing This Apple Marketing Survey



APPENDIX III

GENERAL COMMENTS FROM END OF SURVEYS

"Rome Beauty apples are pretty, but tasteless."

"In the Winter, Spring, Summer, I do not eat an apple every day, but do eat some every week. I can apple sauce and freeze apples for pies."

"I would not want Ohio to specialize in producing any apple variety."

"I enjoy firm apples -- that is what I look for mostly and Fuji apples are always firm and in good condition."

"I love apples -- Had orchard on farm in Southern Ohio when a boy -- worked with them -- also worked on apple farm -- Wells Orchard."

"I pick apples at the orchard in the Fall and keep them in a spare refrigerator. They will last all year if I want them to. Golden Delicious is the apple!"

"I tend to eat more apples when I am dieting."

"I purchase apples weekly, in small quantities, at the grocery store. I am not a person in search of the perfect apple."

"Please send me some delicious apples."

"Winter months -- January, February and March, we spend in Florida -- and we buy all the fruit we can at the Flea Markets. Rest of the year, all our apples are from the supermarkets."

"I am not a great lover of apples. However, I eat them because they provide bulk and nutrition."

"Gala is by far the best apple in Ohio. McIntosh is the best for cooking."

"This survey was too long!!!"

"Rome Beauty apples are best for baking sugarless pies and other deserts (especially for the Diabetics)."

"I prefer apples in fall when they are seasonal and in Winter when the quality of other fruit is poorer than apples (they do well in Winter). I switch to other fruits because I love all seasonal produce and Summer brings other, refreshing choices."

"I have worn a partial plate for several years and have been unable to eat apples. I am currently having a dental implant. When it is completed, I'm going to eat an apple -- first thing!"

"I pick apples in season and store all Winter until early Spring. Therefore I do not purchase apples in stores."

"I shop local markets in Fall to enjoy varieties as they come into season and are crisp and flavorful. When orchards close for Winter, I shop supermarkets and purchase stored apples usually from Washington state, or increasingly imported because they are firm. Even with storage, apples won't compete with Summer fruit."

"The best apple that is available is the Granny Smith. It makes wonderful pies and dumplings. The McIntosh is next. I could not get them the last time I was at Kroger."

"Apples are the second most purchased fruit in our household. If an apple has an excellent flavor, there is no better fruit. It would be nice to purchase fruit during the Winter that has a good taste."

"Poor variety and quality of apples available in groceries after January until September. Too many Red and Golden Delicious from Washington don't have any flavor."

"Our market (Meijer) has beautiful fruit, never damaged. Glad to help in your survey."

"Gala apples are too hard to find!"

"As I stated before, I hate waxed apples. I wash all my fruit in warm, soapy water, but even that won't remove the waxyness. If at all possible, I avoid buying them. I take an apple to work every day! More information on apple varieties in stores would be helpful -- texture, tartness/sweetness, use, etc."

"Price will affect my purchases more than anything."

"I grew up on a farm with plenty of fruit of all types, apples, peaches, berries of all kinds, same as apples of all kinds. I have always eaten apples, my favorite."

"I have read and heard (on T.V.) that an apple offers very little value to the human body."

"I know that growers have to go with whatever sells, but I lament the demise of some of the older varieties. I only find some of them in Amish country."

"For the past several years, Red Delicious apples (in supermarkets) are mushy and tasteless. I don't like the controlled storage."